

2016

# ADVANCED LITHOGRAPHY EXHIBITION GUIDE.

[WWW.SPIE.ORG/AL](http://WWW.SPIE.ORG/AL)

MOVING TECHNOLOGY TO MARKET

Exhibition  
23-24 February 2016

Conferences & Courses  
21-25 February 2016

San Jose Marriott and  
San Jose Convention Center  
San Jose, California, USA

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## LSC-5000

# Pelliclized and Unpelliclized Reticle Cleaning System

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### Features

- Two Dual Dispense Arms:
  - Linear Arm Provides Uniform Cleaning of Front Side Alignment Marks for Pelliclized Reticles
  - Radial Arm Provides Uniform Dispense of DIW with Megasonic Energy for Back Side Cleaning
- Megasonic Clean
- Chemical Dispense
- SC1 Clean
- Brush Clean with Megasonic DIW Dispense through the Brush
- Brush Self Clean with Megasonic DIW
- Dual Drain
- N<sub>2</sub>/IR Lamp Dry
- Fully Automated with Touchscreen Interface
- Robotic Handling and Transfer from SMIF Pod
- Automatic Bar Code Reader
- Data/Error Logging
- DIW Resistivity Measurement
- Class 1 Cleanroom Compatible
- Footprint 59"D x 45"W

### Options

- Ozone Clean
- CO<sub>2</sub> Ionizer
- Bulkfill
- Hard to Remove Resist Strip
- Up to 9"x9" Mask Clean
- 21"OD, 15"x15" Large Substrate Clean

**VISIT US AT  
BOOTH # 201**



**NANO-MASTER, Inc.**

Ph. 512-385-4552; [main@nanomaster.com](mailto:main@nanomaster.com); [www.nanomaster.com](http://www.nanomaster.com)



# Welcome to the Exhibition

Tuesday 23 February · 10:00 AM to 5:00 PM  
Wednesday 24 February · 10:00 AM to 4:00 PM

**SPIE.** ADVANCED LITHOGRAPHY

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SPIE would like to express its deepest appreciation to the symposium chairs, conference chairs, program committees, session chairs, and authors who have so generously given their time and advice to make this symposium possible.

The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members. This program is based on commitments received up to the time of publication and is subject to change without notice.

For information about exhibiting, sponsorship, and advertising opportunities at future Advanced Lithography events, contact: SPIE Sales at [spiesales@spie.org](mailto:spiesales@spie.org)

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**SPIE.**

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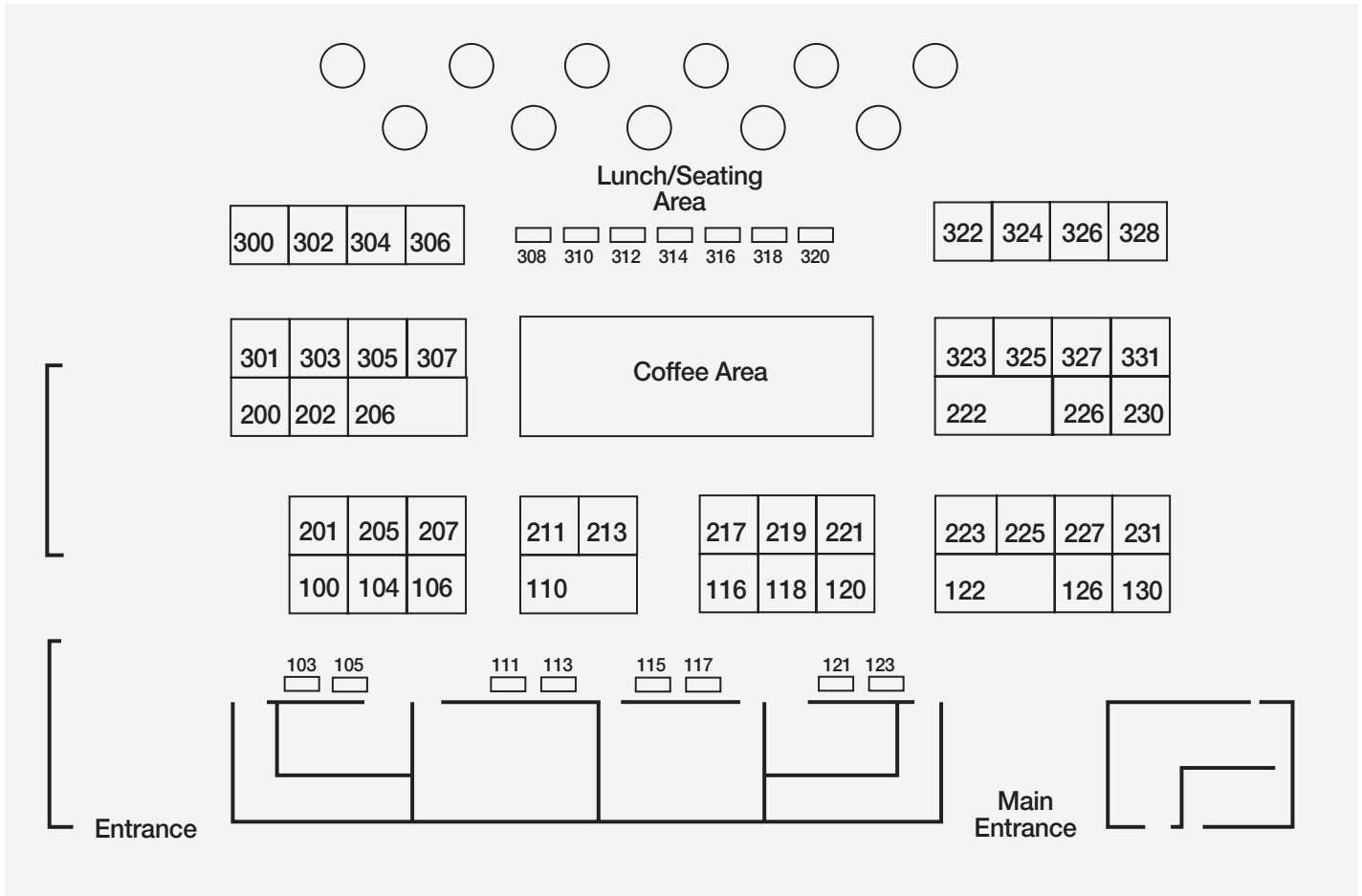
Thanks to the following sponsors for their generous support of SPIE Advanced Lithography

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# SAN JOSE CONVENTION CENTER · EXHIBITION FLOOR



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# GENERAL INFORMATION

## Exhibition Hours

Tuesday 23 February · 10:00 am to 5:00 pm  
Wednesday 24 February · 10:00 am to 4:00 pm

## Registration

San Jose Convention Center

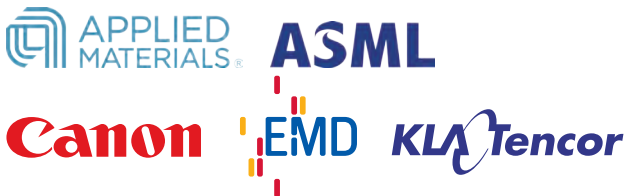
Sunday 21 February · 7:15 am to 5:00 pm  
Monday 22 February · 7:15 am to 4:00 pm  
Tuesday 23 February · 7:30 am to 5:00 pm  
Wednesday 24 February · 7:30 am to 4:00 pm  
Thursday 25 February · 7:45 am to 4:00 pm  
(conference reg only)

## Coffee Breaks

Served daily – 7:30 am, 10:00 am and 3:00 pm

Check individual conference listings for exact times and locations.

Sponsored by



## Breakfast Breads

Convention Center, Ballroom Concourse  
Monday – Thursday, 7:30 am

Monday and Wednesday Breakfast Breads sponsored by



## Food and Refreshments for Purchase

Convention Center, Ballroom Concourse  
Monday – Thursday, 7:30 am to 3:00 pm

Hot and cold snacks, hot entrees, deli sandwiches, salads, and pastries are available for purchase. Cash and credit cards accepted.

Exhibition Hall Concession Stand

Tuesday – Wednesday, 11:00 am – 2:00 pm

Hot and cold snacks, hot entrees, deli sandwiches, salads, and pastries are available for purchase. Cash and credit cards accepted.

## SPiE Hosted Lunches

Exhibition Hall  
Tuesday – Wednesday, 11:30 am to 1:00 pm

Check individual conference listings for exact times

Complimentary tickets for these lunches will be included with full conference registrations. Exhibitors and students may purchase tickets at the Cashier Desk.

Wednesday Hosted Lunch sponsored by



## Desserts

Exhibition Hall 1  
Tuesday and Wednesday

Complimentary tickets for desserts will be included in conference attendee and exhibitor registration packets.

## Internet Options

Location of Internet – Convention Center Ballroom Concourse

Complimentary wired internet access is available; attendees can connect their laptops or use provided workstations.

Internet Pavilion sponsored by



## WiFi

Location of WiFi – Convention Center Upper Level Concourse

Complimentary wireless access is also available; instructions will be posted onsite.

West end WiFi sponsored by



East end WiFi sponsored by



## SPiE Conference and Exhibition App

Search and browse the program, special events, participants, exhibitors, courses, and more. Free Conference App available for iPhone and Android phones.

## SPiE Bookstore

Convention Center Lobby near Registration

Stop by the SPiE Bookstore to browse the latest SPiE Press Books, proceedings, and educational materials. While there, get a t-shirt or educational toy to bring home to the family.

## Restaurant Reservations and Information Desk

The San Jose Convention and Visitors Bureau operates a Restaurant Reservations and Information Desk on the street level of the Convention Center near the main entrance. The desk will be open Sunday through Thursday during core hours of the convention. For more information visit their website <http://www.sanjose.org>



# 15

## SPIE COURSES

**SPIE STUDENT MEMBERS  
GET 50% OFF COURSES—SEE  
DETAILS AT REGISTRATION**

### SUNDAY

|  |
|--|
| SC1099 <b>Chemistry and Lithography</b> (Okoroanyanwu) 8:30 am to 5:30 pm, \$700 / \$810   |
| SC1155 <b>Design Technology Co-Optimization in the Era of Sub-resolution IC Scaling</b> (Liebmann, Vaidyanathan) 8:30 am to 5:30 pm, \$645 / \$755 |
| SC888 <b>EUV Lithography</b> (Bakshi, Ahn, Naulleau) 8:30 am to 5:30 pm, \$830 / \$940   |
| SC1173 <b>How and Why: The big ideas in semiconductor lithography</b> (Mack, Petersen) 8:30 am to 5:30 pm, \$685 / \$795                           |
| SC101 <b>Introduction to Microlithography: Theory, Materials, and Processing</b> (Willson, Bowden) 8:30 am to 5:30 pm, \$600 / \$710               |
| SC992 <b>Lithography Integration for Semiconductor FEOL &amp; BEOL Fabrication</b> (Lin, Zhang) 8:30 am to 5:30 pm, \$600 / \$710                  |
| SC1133 <b>Metrology Toolset Monitoring, Matching, Maintenance and Management</b> (Solecky, Adan) 8:30 am to 12:30 pm, \$375 / \$430                |
| SC1132 <b>Modeling and Computational Lithography Fundamentals</b> (Lai) 8:30 am to 5:30 pm, \$600 / \$710  |
| SC885 <b>Principles and Practical Implementation of Multiple Patterning</b> (Dusa, Hsu) 8:30 am to 5:30 pm, \$600 / \$710                          |
| SC1172 <b>Spatial Coherence and Impact on Lithography Simulation and OPC</b> (Kang) 8:30 am to 12:30 pm, \$375 / \$430                             |
| SC1067 <b>Directed Self Assembly and its Application to Nanoscale Fabrication</b> (de Pablo, Nealey, Ruiz) 1:30 pm to 5:30 pm, \$375 / \$430       |
| SC1158 <b>Metrology of Image Placement</b> (Starikov) 1:30 pm to 5:30 pm, \$380 / \$435  |

### MONDAY

|  |
|--|
| SC1030 <b>Interaction of Physical Design and Lithography</b> (Yuan) 1:30 pm to 5:30 pm, \$375 / \$430                                |
| SC1159 <b>Optimization Methods for Lithographers</b> (Granik) 1:30 pm to 5:30 pm, \$375 / \$430                                      |
| SC1187 <b>Understanding Design-Patterning Interactions for EUV and DSA</b> (Gupta, Torres, Mallik) 1:30 pm to 5:30 pm, \$375 / \$430 |

Get training to gain new skills, stay competitive, and advance your career.

- Learn from the best—don't miss the opportunity for direct instruction from legends in the semi/litho industry, many of whom are pioneers in their fields
- Course topics are continually updated and aligned with current industry needs and trends
- Earn CEUs for professional continuing education requirements
- Money-back guarantee!

### NEW COURSES

- SC1172 **Spatial Coherence and Impact on Simulation and OPC**
- SC1173 **How and Why: The Big Ideas in Semiconductor Lithography**
- SC1187 **Understanding Design-Patterning interactions for EUV and DSA**

### MONEY-BACK GUARANTEE

We are confident that once you experience an SPIE course for yourself you will look to us for your future education needs. However, if for any reason you are dissatisfied, we will gladly refund your money. We just ask that you tell us what you did not like; suggestions for improvement are always welcome.

### CONTINUING EDUCATION UNITS



SPIE has been approved as an accredited provider of CEUs by IACET, The International Association for Continuing Education and Training (Provider #1002091). In obtaining this approval, SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

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

# EXHIBITOR DIRECTORY



## ADVANCED LITHOGRAPHY

Tuesday · 10:00 am to 5:00 pm

Wednesday · 10:00 am to 4:00 pm

Exhibitors are listed in alphabetical order with details about products or services each is exhibiting. Companies are additionally cross-indexed by technology areas. The address of each exhibitor is also listed, making this Exhibition Guide an excellent reference tool to take back to your office and share with your colleagues.

### Abeam Technologies, Inc.

#213

22290 Foothill Blvd Ste 2, Hayward, CA, 94541 (USA)  
+1 510 497 0222; fax +1 510 279 0076  
support@abeamtech.com; www.abeamtech.com

**Featured Product: myCD: physics based contours, CDs and SWA from SEM images; QSEM: monitoring performance of CD-SEM**

Abeamtech is developing software to optimize metrology, lithography and maskmaking. The products extract true contours, CDs and sidewall angles from top-down SEM images; monitor performance of CD-SEMs; correct placement errors in maskmaking; simulate and predict SEM images; simulate CDs and profiles in e-beam lithography. R&D100 award in 2015 for 1.5 nm nanofabrication. Headquarters: in California, a subsidiary in Japan and representative companies in Korea and Taiwan. Contact: Sergey Babin, President, support@abeamtech.com

### Amuneal Manufacturing Corp.

#306

4737 Darrah St, Philadelphia, PA, 19124 (USA)  
+1 215 535 3000; fax +1 215 743 1715  
info@amuneal.com; www.amuneal.com

**Featured Product: Magnetic Shielding**

Since 1965, Amuneal has been serving highly technical markets, working with leaders in aerospace, electronics, cryogenics, healthcare, and research to develop cost-effective magnetic shielding strategies and products that outperform the most demanding requirements. Contact: Michael Adolf, Director, Technical Products, mikea@amuneal.com; Stuart Koch, VP, Technical Products, stuartk@amuneal.com

### attocube systems Inc.

#106

**SPIE** Corporate Member  
2020 Stuart St, Berkeley, CA, 94703 (USA)  
+1 510 649 9245  
info@attocube.com; www.attocube.com

attocube offers highest precision piezo positioning systems and multi-axes position displacement sensors based on fiber interferometer technology. With the introduction of the IDS3010, attocube now offers an industrial sensor solution which is designed for OEM integration. The IDS3010 is based on the same R&D100 award-winning technology of attocube's well-established FPS3010 lab measurement system. The IDS3010 opens a new world of possibilities for demanding position sensing applications.

### Benchmark Technologies

#120

7 Kimball Ln, Lynnfield, MA, 01940-2654 (USA)  
+1 781 246 3303; fax +1 781 246 0308  
contact@benchmarktech.com; www.benchmarktech.com

**Featured Product: Resist Based Polarization Monitor, Grayscale mask design and fabrication services**

Benchmark Technologies is a leading supplier of test reticles to lithographers in the semiconductor and related industries. We supply reticles and associated software to monitor litho tool focus, polarization, matching, resolution and more. We also offer OmniMatch, our stand alone overlay monitor and analysis software. We work with many fabrication partners to supply conventional and custom masks, reticles imprint templates and other custom fabricated items. Contact: Andrew Zanzal, Vice President of Sales, azanzal@benchmarktech.com; Patrick Reynolds, President, preynolds@benchmarktech.com



## Berliner Glas KGaA Herbert Kubatz GmbH & Co.

#200

**SPIE** Corporate Member

Waldkraiburger Str 5, Berlin, 12347 Germany  
+49 30 60905 0; fax +49 30 60905 100  
chucks@berlinglas.de; www.berlinglas.com

**Featured Product: Key solutions from optical assemblies via chucks up to complete stage modules**

The Berliner Glas Group provides key solutions from optical assemblies via chucks up to complete stage modules for the semiconductor equipment industry. As a classic OEM partner - from concept to volume production - Berliner Glas supplies various market segments in front- and middle-end including lithography, inspection and 3D packaging. Knowing the drivers of each segment Berliner Glas is contributing to your success by early design involvement, fast prototyping and reliable volume production. Contact: Kevin Liddane, Director of Sales - North America, kliddane@berlinglas.com

*Featured Exhibitor*

## Brewer Science

#300

**SPIE** Corporate Member

2401 Brewer Dr, Rolla, MO, 65401 (USA)  
+1 573 364 0300  
info@brewerscience.com; www.brewerscience.com

**Featured Product: Temporary Bonding Systems; Thin Wafer Handling; Directed Self-Assembly; Lithography Materials**

Brewer Science is a global technology leader in developing and manufacturing advanced materials, processes, and equipment for the reliable fabrication of microdevices used in consumer electronics. In 1981, Brewer Science revolutionized lithography processes with its invention of ARC® materials. Today Brewer Science continues to expand its technology portfolio to include products enabling advanced lithography and thin wafer handling. Contact: Ram Trichur, Advanced Packaging Mgr, rtrichur@brewerscience.com; Darron Jurajda, Lithography Mgr, djurajda@brewerscience.com

## Cadence

#230

2655 Seely Ave, San Jose, CA, 95134-1931 (USA)  
+1 408 943 1234  
www.cadence.com

**Featured Product: Litho Physical Analyzer, Cadence CMP Predictor, Litho Electrical Analyzer, Cadence Pattern Analysis, and LDE**

Cadence enables global electronic design innovation and plays an essential role in the creation of today's ICs and electronics. Customers use Cadence software, hardware, IP, and services to design and verify advanced semiconductors, consumer electronics, networking and telecommunications equipment, and computer systems. Learn more about the San Jose, California-based company, its products, and its services at <http://www.cadence.com>.

*Coffee Break Sponsor, Featured Exhibitor*

## Canon U.S.A., Inc.

#202

**SPIE** Corporate Member

Industrial Products Division, 3300 N First St, San Jose, CA, 95134-1900 (USA)  
+1 408 468 2000; fax +1 408 468 2149  
semi-info@cusa.canon.com; www.usa.canon.com/industrial

**Featured Product: FPA-5510iV steppers enable high-yield 2.5D, 3D and Advanced Packaging processes.**

Canon USA Industrial Products Division provides advanced wafer & panel process equipment for applications including semiconductor, Advanced Packaging & display. Canon provides cost-effective wafer processing solutions including i-line & KrF optical lithography, nanoimprint lithography & Canon Anelva deposition equipment. Canon also has a variety of panel based lithography & deposition solutions that can be extended to a variety of applications. Contact semi-info@cusa.canon.com for more info. Contact: Doug Shelton, Marketing Manager, sshelton@cusa.canon.com

*Conference Bag Sponsor*

## Carl Zeiss SMT GmbH

#221

Carl Zeiss Promenade 10, Jena, 07745 Germany  
+49 3641 64 2242; fax +49 3641 64 2938  
info.sms@zeiss.com; www.zeiss.com/mask-solutions

**Featured Product: ZEISS PROVE HR, ZEISS MeRiT neXT, ZEISS CDC, ZEISS RegC, ZEISS AIMS EUV**

The Semiconductor Metrology Systems strategic business unit specializes in a key component in semiconductor production: lithographic photomasks. With its core competencies in light and electron optics and unique femtosecond laser technology, SMS offers products to assess mask defects, repair critical defects and verify the results of the repair, and dedicated metrology solutions for photomasks. The instruments are used by all leading mask manufacturers and wafer fabs around the world. Contact: James Polcyn, Sr. Director Sales & Operations, Jim.Polcyn@zeiss.com; Leila Hammad, Manager Marketing & Communications, leila.hammad@zeiss.com

## Coventor, Inc.

#227

1000 Centre Green Way Ste 200, Cary, NC, 27513 (USA)  
+1 919 854 7500; fax +1 919 869 1472  
sales@coventor.com; www.coventor.com

**Featured Product: SEMulator3D® is a powerful 3D semiconductor and MEMS process modeling platform.**

Coventor, Inc. is the market leader in automated design solutions for developing semiconductor process technology, as well as micro-electromechanical systems (MEMS). Coventor serves a worldwide customer base of integrated device manufacturers, memory suppliers, fabless design houses, independent foundries, and R&D organizations. Its SEMulator3D modeling and analysis platform is used for fast and accurate 'virtual fabrication' of advanced manufacturing processes. Contact: Dinesh Bettadapur, Sr. Director of Business, Semiconductor, dbettadapur@coventor.com; sales@coventor.com

# EXHIBITOR DIRECTORY

General Sponsor

## CyberOptics Corp.

#308

5900 Golden Hills Dr, Minneapolis, MN, 55416 (USA)  
+1 763 542 5827; fax +1 763 542 5000  
info@cyberoptics.com; www.cyberoptics.com

### Featured Product: ReticleSense Auto Multi Sensor (AMSR) and ReticleSense Airborne Particle Sensor (APSRQ)

CyberOptics Corporation (NASDAQ: CYBE) is a leading global developer and manufacturer of high precision sensing technology solutions. CyberOptics sensors are being used in general purpose metrology and 3D scanning, surface mount technology (SMT) and semiconductor markets to significantly improve yields and productivity. For semiconductor, CyberOptics markets the WaferSense and ReticleSense portfolio of wireless measurement devices that are used worldwide by semiconductor fabs and equipment OEMs. Contact: Allyn Jackson, Sales - US & Europe, ajackson@cyberoptics.com

## Energetiq Technology, Inc.

#312

**SPiE** Corporate Member

7 Constitution Way, Woburn, MA, 01801-1024 (USA)  
+1 781 939 0763; fax +1 781 939 0769  
info@energetiq.com; www.energetiq.com

Energetiq Technology is the world's leading developer and manufacturer of ultra-bright light sources. The EUV light source, based on Energetiq's proven Electrodeless Z-pinch™ technology using Xenon gas. The EQ-10 EUV source is uniquely suited for metrology and research. Energetiq's also offers Laser-Driven Light Sources (LDLS™) based on a revolutionary technology that generates high brightness across the spectrum, with high reliability and long life. Contact: Debbie Gustafson, COO, info@energetiq.com

## Fine Semitech Corp.

#113

15-23 Dongtansandan 6-gil Dongtan-myeon, HwaSung City KyungGi-Do, Kyonggi, 445-811 Korea, Republic of  
+82 31 370 0808; fax +82 31 370 0777  
sales@fst.co.kr; www.fstc.co.kr

Since its establishment in 1987, FST has been committed to supplying high quality products to high-end semiconductor and FPD industries. We have achieved continuous growth in Pellicle business, one of main material used in semiconductor or FPD manufacturing process and Chiller which controls temperature and humidity of various equipment. FST also innovates self-developed optical inspection systems and secures competitiveness in the newly developing semiconductor related products. Contact: Heesu Chang, Manager, heesu@fstc.co.kr; Ted Kim, Assistance Manager, kimth@fstc.co.kr

## GenlSys GmbH

#322

Eschenstr 66, Taufkirchen Muenchen, 82024 Germany  
+49 8954 806879; fax +49 8954 806883  
info@genisys-gmbh.com; www.genisys-gmbh.com

### Featured Product: LAB All-in-One Lithography Simulation. Enable next generation products and faster development cycles

Based in Munich, Germany, with offices in Tokyo, Japan and San Francisco, California, GenlSys develops, markets and supports flexible, high-performance software solutions for the optimization of micro and nano fabrication processes. Addressing the market for lithography and inspection, GenlSys combines deep technical expertise in layout data processing, process modeling, correction and optimization with world class software engineering and a strong focus on ease of use. Contact: Roger McCay, Sales Director North America, mccay@genisys-gmbh.com; Nezhil Unal, Vice President, unal@genisys-gmbh.com

## GLOBALFOUNDRIES Inc.

#318

400 StoneBreak Ext, Malta, NY, 12020 United States  
+1 518 305 9013  
www.globalfoundries.com

## Gudeng Precision Industrial Co., Ltd. #304

9F., No.2, Sec.4, Zhongyang Rd., Tucheng Dist., New Taipei City, 23678 Taiwan  
+886 2 2268 9141; fax +886 2 2268 3443  
sales@gudeng.com; www.gudeng.com.tw

### Featured Product: EUV POD, RSP150, RSP200, Photomask Package, Reticle Case, MRSP, Mask Pick, TFT-LCD Mask Package

Gudeng is a global critical photomask handling solution provider. The core competence of Gudeng is our material, manufacturing and service integration experiences in the Semiconductor, Solar, LCD and LED industry. Gudeng has contributed to developing innovative technology and has been a technological leader of Extreme Ultraviolet Lithography (EUV) mask handling. Gudeng makes customer's requirements its first priority and aims to provide them with advanced solutions to improve their yields. Contact: Iris Liu, Section Manager, IrisLiu@gudeng.com; David Tai, Sales Representative, david.tai@gudeng.com

## Halocarbon Products

#207

**SPiE** Corporate Member

6525 The Corners Pkwy. Ste. 200, Peachtree Corners, GA, 30092 (USA)  
+1 201 262 8899; fax +1 201 262 0019  
info@halocarbon.com; www.halocarbon.com

### Featured Product: Fluorinated speciality products

With headquarters in Atlanta, Georgia and a state-of-the-art manufacturing plant in North Augusta, South Carolina, USA, Halocarbon is one of the world's leading producers of specialty fluorochemicals. Halocarbon products include aliphatic fluorochemicals for fluorinated monomers for top-coat photoresists and lithography applications. In addition, solvents and fluorinated phosphate esters for lithium batteries. Contact: Ronald Epstein, Sales Director, repstein@halocarbon.com

## Heidelberg Instruments Inc.

#326

**SPiE** Corporate Member

2807 Oregon Ct Unit E2, Torrance, CA, 90503-2635 (USA)  
+1 310 212 5071; fax +1 310 212 5254  
info@himt.us; www.himt.us

### Featured Product: VPG 200, VPG400, VPG800, VPG1400, MLA150, MLA100, DWL66+, DWL2000/4000, microPG101

With an installation base of over 600 systems in more than 50 countries, Heidelberg Instruments Mikrotechnik is a world leader in production of Lithography Systems for Photomask Production and Maskless Aligners. Our systems are used in some of the most advanced research, development and industrial applications for direct writing and photomask production by the most prestigious universities and industry leaders in the areas of MEMS, BioMEMS, Nano Technology, ASICS, TFT and other applications. Contact: Niels Wijnaendts van Reandt, Dir. Sales and Marketing, niels.wijnaendts@himt.de

## ibss Group, Inc.

#307

**SPIE** Corporate Member

111 Anza Blvd Ste 110, Burlingame, CA, 94010 (USA)  
+1 650 513 1488; fax +1 650 513 1884  
admin@ibssgroup.com; www.ibssgroup.com

### Featured Product: GV10x Downstream Plasma Cleaner

Develops and produces GV10x Downstream Plasma Cleaner models and related products used successfully in EM and Synchrotron labs around the world. The GV10x Downstream Asher reduces carbon & hydrocarbon contamination 10 to 20x more effectively than traditional methods at vacuum pressure safe for TMP operation. The new Mobile Cubic DS Asher (MCA) cleans chambers in-situ and samples ex-situ, helping to prevent high resolution imaging degradation and additional chamber contamination build up. Contact: admin@ibssgroup.com

## Inko Industrial Corp.

#310

695 Vaqueros Ave, Sunnyvale, CA, 94085-3524 (USA)  
+1 408 830 1041; fax +1 408 830 1055  
sales@pellicle-inko.com; www.pellicle-inko.com

### Featured Product: ArF pellicle, KrF pellicle, I/G line pellicle

INKO, a U.S. based company, manufactures a complete line of pellicles for applications ranging from ASIC production to high volume memory production. From broadband to I/G line, to 248nm/193nm DUV lithography, we have the right pellicles for your needs. Contact Joe Mac, Sales and Customer service, joemac@pellicle-inko.com, or Feng Ye, ye@pellicle-inko.com

## Inspectrology LLC

#316

**SPIE** Corporate Member

142 North Rd Ste N, Sudbury, MA, 01776 (USA)  
+1 978 897 1775; fax +1 978 897 1787  
info@inspectrology.com; www.inspectrology.com

### Featured Product: IVS 200 CD and Overlay Metrology System

Inspectrology's IVS Overlay and CD Metrology Systems have been the gold standard for reliability in fabs for over 30 years. With world wide support and representatives in every major market, Inspectrology is well positioned to provide the support needed to keep fabs running at peak efficiency. With decades of Metrology experience, the semiconductor professionals at Inspectrology provides full service support, metrology products, metrology standards, and educational training services. Contact: Paul Knutrud, Vice President of Marketing, pknutrud@inspectrology.com; Mike Kessler, Vice President of Sales, mkessler@inspectrology.com

## Integrated Micro Materials

#301

8141 Gateway Dr Ste 240, Argyle, TX, 76226 (USA)  
+1 888 632 0997; fax +1 940 228 2234  
sales@imicromaterials.com; www.imicromaterials.com

### Featured Product: Photoresists, lithography ancillaries, and process chemicals for micro manufacturing and research

Distributor of advanced lithography and semiconductor processing materials. Products and Services include microfabrication process consulting, photomasks, material handling products and processes, and clean room dip tube exchange and sample prep. Contact: Brad Williams, General Manager, bwilliams@imicromaterials.com

## J.A. Woollam Co., Inc.

#126

645 M St Ste 102, Lincoln, NE, 68508-2243 (USA)  
+1 402 477 7501; fax +1 402 477 8214  
sales@jawoollam.com; www.jawoollam.com

For all of your ellipsometry needs, from measuring your thin film sample to installing and training of your very own ellipsometer, the J.A. Woollam Company is here for you every step of the way. We provide a wide variety of ellipsometers to help you characterize your thin films, covering spectral ranges from vacuum ultra-violet to far infrared. We have over 25 years of experience and support in both the research and manufacturing industry. Contact us today at sales@jawoollam.com to learn more.

## JENOPTIK Optical Systems, LLC

#231

**SPIE** Corporate Member

16490 Innovation Dr, Jupiter, FL, 33478-6428 (USA)  
+1 561 881 7400; fax +1 561 881 1947  
sales@jenoptik-inc.com; www.jenoptik-inc.com  
Contact: Beth McDonald, Inside Sales Coordinator

### General Sponsor

## JSR Micro, Inc.

#122

**SPIE** Corporate Member

1280 N Mathilda Ave, Sunnyvale, CA, 94089-1213 (USA)  
+1 408 543 8800; fax +1 408 543 8996  
sales@jsrmicro.com; www.jsrmicro.com

### Featured Product: Leading-edge photoresists, developers, packaging materials and specialty chemicals.

JSR Micro, Inc. manufactures the industry's most innovative family of photoresists, developers, and specialty chemicals for trilayer, immersion materials, and chemical shrink, from the company that perfected the art of customer collaboration. JSR is also a leader in materials for packaging. Our unique THB series of negative tone resists and WPR series of dielectric materials are ideal for next generation WL-CSP (wafer level chip scale packaging) technologies that facilitate higher performance. Contact: Rich Rennels, rrennels@jsrmicro.com; Missy Bindseil, mbindseil@jsrmicro.com

## King Industries Inc.

#104

1 Science Rd, Norwalk, CT, 06852 (USA)  
+1 203 866 5551; fax +1 203 866 1268  
dmiller@kingindustries.com; www.kingindustries.com

King will feature technical information on its line of high purity specialty chemicals for electronic applications marketed under the K-PURE trade name. Product types include thermal acid generators, epoxy catalysts, amino thermoset catalysts, hydroxyl functional resin modifiers, organic corrosion inhibitors, dispersants and rheology modifiers. Contact: Dan Miller, Technical Marketing Manager, dmiller@kingindustries.com

# EXHIBITOR DIRECTORY

## LouwersHanique

#320

Energieweg 3A, Hapert, 5527 AH Netherlands  
+31 497 339 696; fax +31 497 386 372  
sales@louwershanique.com; www.louwers.nl

**Featured Product: 3D components in glass and fused silica using "Selective Laser-induced Etching" (SLE) Technologies**

LouwersHanique has been a leading specialist in the manufacturing of technical glass and ceramic components as well as assembly technologies for a wide variety of high-tech industries for over 60 years. We are specialized in thermal forming of glass and in the mechanical and laser processing of technical glass and technical ceramics. Our state of the art equipment and clean room facilities allow the precision manufacturing of parts and assemblies with tolerances into the (sub)micron region. Contact: Carel Van de Beek, Sr. Account Manager, carel.van.de.beek@louwershanique.com; Paul Meyer, Senior Applications and Sales Engineer, Paul.Meyer@LouwersHanique.com

## Materials Design, Inc.

#205

PO Box 2000, Angel Fire, NM, 87710 (USA)  
+1 760 495 4924; fax +1 760 692 1640  
info@materialsdesign.com; www.materialsdesign.com

**Featured Product: MedeA high-productivity modeling environment: Understand properties and interactions of materials**

Materials Design, Inc. is the leader in computational materials engineering on the atomic scale. Our solutions successfully serve the needs of leading industrial, academic and research customers in electronic devices design and manufacturing, chemicals and many other industries. With device miniaturization pushing into atomic scale, we help address your challenges by providing key properties of novel materials, modeling their interactions and behavior, thus accelerating your pace to the market. Contact: Jason Coloma, Sales Director, jcoloma@materialsdesign.com; Paul Saxe, CEO, psaxe@materialsdesign.com

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## Mentor Graphics

#225

**SPiE** Corporate Member

8005 SW Boeckman Rd, Wilsonville, OR, 97070-7777 (USA)  
+1 503 685 7000; fax +1 503 685 1543  
calibre@mentor.com; www.mentor.com

**Featured Product: Calibre RET/MDP**

The challenges of developing advanced lithography flows require a strong partner. With a complete design-to-manufacturing platform for Immersion Lithography, EUV and DSA, Mentor Graphics is the ideal partner for semiconductor manufacturing success. We offer best-in-class technology, comprehensive solutions, development and production support, and continuous innovation. That is why more than 30 fabs choose Mentor as their partner. Get more info at www.mentor.com. Contact: Gandharv Bhatara, Product Marketing Manager, Gandharv\_Bhatara@mentor.com

## MGN International, Inc.

#303

41984 Rio Nedo Ste 200, Temecula, CA, 92590 (USA)  
+1 951 719 2910; fax +1 951 719 2920  
info@mgninternational.com; www.mgnintl.com

*General Sponsor*

## Micro Lithography, Inc.

#219

1257 Elko Dr, Sunnyvale, CA, 94089-2211 (USA)  
+1 408 747 1769; fax +1 408 747 1978  
www.mliusa.com; www.mliusa.com

**Featured Product: Pellicles and Mounting Tool**

MLI is featuring pellicles formulated to yield high rates of transmission and long lifetimes for UV exposure. Our complete line of pellicle films ranges from broadband, g-/i-line to DUV (KrF-248nm and ArF-193nm). MLI's DUV pellicles have the lowest outgassing materials available in the market today. Contact: Kevin Duong, Customer Service Manager, kevin.duong@mliusa.com; Corbin Imai, Sales Representative, corbin@zysancorp.com

## micro resist technology GmbH

#325

Koepenicker Str. 325, Berlin, 12555 Germany  
+49 30 64 16 70 100; fax +49 30 64 16 70 200  
mrt@microresist.de; www.microresist.com

For more than 20 years, micro resist technology GmbH (mrt) has been developing and providing innovative photoresists, special polymers and ancillary materials for a variety of micro- and nanolithography applications. Due to the highly specialized products, mrt is a trusted supplier of global high-tech markets such as semiconductor industry, MEMS, optoelectronics, nanotechnology and other emerging technologies.

## MicroChem Corp.

#323

200 Flanders Rd, Westborough, MA, 01581 (USA)  
+1 617 965 5511; fax +1 617 831 2354  
mcc@microchem.com; www.microchem.com

**Featured Product: photoresists and ancillary materials such as SU-8, KMPR, PMMA, PMGI and LOR.**

MicroChem Corp is a manufacturer of innovative chemical solutions for MEMS and microelectronics. Our PMGI and LOR lines are widely used for bi-layer lift off applications. We provide our SU-8 epoxy based thick resists for MEMS and other applications and KMPR resists for plating or DRIE. Due to our 20 year association with Dow Chemicals we are the only distributor licensed to supply the full range of Dow microelectronic, packaging and BCB materials. Come see our newest product offerings Contact: Rob Hardman, Inside Sales Manager, rhardman@microchem.com; Rob Andrews, Distribution Sales Manager, bandrews@microchem.com



## Mitsui Chemicals America, Inc. #105

2099 Gateway Pl Ste 300, San Jose, CA, 95110-1017 (USA)  
+1 408 487 2891; fax +1 408 453 0684  
info@mitsuichem.com; www.mitsuichemicals.com

### Featured Product: Mask Pellicle

Since 1986, Mitsui has been the industry leader in providing pellicles to the semiconductor industry. Mitsui's ISO 9001 certified full automated plant produces Mitsui Pellicle, which transmits more than 99% of exposed light with excellent uniformity and longevity. Mitsui Pellicle, manufactured by rigorous selection of all materials and with more than 25 years accumulated expertise of non-dust structure, contributes to maximum production yields by eliminating pellicle related particle generations. Contact: Yurie Mizuno, Asst. Sales Manager, Y.mizuno@mitsuichem.com; Hiromi Tsuboi, Sales Manager, H.tsuboi@mitsuichem.com

## Nano-Master, Inc. #201

3019 Alvin Devane Blvd Ste 300, Austin, TX, 78741-7416 (USA)  
+1 512 385 4552; fax +1 512 385 4900  
main@nanomaster.com; www.nanomaster.com

### Featured Product: Pelliclized Reticle Cleaner: Fully automated, front and backside cleaning of pelliclized reticles.

NANO-MASTER, Inc. manufactures equipment for Semiconductor, MEMS, Optoelectronics, Nanotechnology and Photovoltaic applications. NANO-MASTER products include PECVD Systems for deposition of SiO<sub>2</sub>, Si<sub>3</sub>N<sub>4</sub>, DLC and CNT; PA-MOCVD Systems for InGaN and AlGaIn; Reactive Sputtering, Co-Sputtering, and Combinatorial Sputtering Systems; Thermal and E-beam Evaporators, Ion Beam Milling and Reactive Etching Systems; Atomic Layer Deposition Tools; Pelliclized Reticle Cleaner, Megasonic Wafer/Mask Cleaners. Contact: Birol Kuyel, President & CEO, b.kuyel@nanomaster.com

## Pall Corp. #223

25 Harbor Park Dr, Port Washington, NY, 11050-4605 (USA)  
+1 516 484 5400; fax +1 516 801 9711  
microelectronics@pall.com; www.pall.com

### Featured Product: 5 nm high flow Nylon filter, with enhanced adsorption will be introduced for advanced lithography.

Pall has extended our Asymmetric Nylon product to now include the high flow 5 nm version. The high flow 5nm Nylon is available in all lithography filter configurations. Pall offers a complete line of filtration, purification and separation technologies for all lithography processes. Pall has demonstrated that these innovative technologies can significantly reduce on wafer defectivity. Contact: Michael Mesawich, VP Marketing, michael\_mesawich@pall.com

## Pozzetta, Inc. #217

3121 S Platte River Dr, Englewood, CO, 80110-2139 (USA)  
+1 303 783 3172; fax +1 303 374 7342  
sales@pozzetta.com; www.pozzetta.com

### Featured Product: Photomask Boxes, Reticle Cassettes, SMIF Pods, Wafer Carriers

Companies around the world trust Pozzetta to create secure environments for the handling, storage, and transport of photomasks, reticles, and wafers. Pozzetta will protect your valuable products from particles, ESD damage, outgassed components, and high costs. Contact: Artemis Vasiliades, Account Executive, artemis@pozzetta.com; Scott Reese, Account Executive, scott.reese@pozzetta.com

## Welcome Reception Sponsor

## Qoniac GmbH #100

Königsbrücker Str 34, Dresden, 01099 Germany  
+49 351 4189 3340; fax +49 351 41893341  
info@qoniac.com; www.qoniac.com

### Featured Product: OVALiS Suite - Unprecedented optimization of on-product overlay and innovative focus monitoring

Qoniac is a fast growing young company based in Dresden (Germany) that specializes in process optimization and overlay control solutions for leading-edge semiconductor lithography. Qoniac draws from decades of experience in semiconductors and lithography. The company has developed the OVALiS Suite, which provides unprecedented optimization of on-product overlay as well as innovative focus monitoring capabilities. Currently, Qoniac has an install base in Asia Europe and USA.

## Raith America, Inc. #324

1377 Motor Parkway Ste 101, Islandia, NY, 11749 (USA)  
+1 631 738 9500; fax +1 631 738 2055  
sales@raithamerica.com; www.raith.com

### Featured Product: electron beam lithography (EBL), focused ion beam (FIB) nanofabrication, reverse engineering

Raith is a leading precision technology manufacturer for electron beam lithography (EBL), focused ion beam (FIB) nanofabrication, nanoengineering, and reverse engineering. With sub-10 nm patterning performance, our instruments are enabling researchers in both academic and industry environments to continuously advance their applications in applied nanotechnological research and areas of industry that use nanotechnology for product applications or produce components from compound semiconductors. Contact: Andre Linden, Sales Manager, andre.linden@raithamerica.com

## RI Research Instruments GmbH #328

Friedrich-Ebert-Str 75, Bergisch Gladbach, 51429 Germany  
+49 22 04 7062 2500; fax +49 22 04 7062 2501  
sales@research-instruments.de; www.research-instruments.de

### Featured Product: EUV sources, actinic components and tools for characterization or metrology around EUVL

RI Research Instruments provide technology and solutions for particle accelerators, photon instrumentation, as well as special manufacturing. Our long term experience in EUV/XUV photon applications enables us to provide new stand-alone actinic solutions like e.g. EUV sources, components and tools for masks, optics and resist characterization or metrology around EUVL. We design, manufacture, test and deliver globally to the needs of our customers at leading laboratories and in industry. Contact: Arnd Baurichter, Director Sales and Marketing, sales@research-instruments.de; Rainer Lebert, Senior Manager XUV / EUV Solutions, sales@research-instruments.de

# EXHIBITOR DIRECTORY

## Rigaku Innovative Technologies, Inc. #118

1900 Taylor Rd, Auburn Hills, MI, 48326-1740 (USA)  
+1 248 232 6400; fax +1 248 232 6500  
info@rigaku.com; www.rigaku.com/component

### Featured Product: Multilayer Coatings for EUV Optics and Diffusers used Systems, Sources and Metrology Tools

With over 30 years experience in coatings for EUV wavelength range, RIT provides high reflectivity and excellent uniformity across complex optic shapes with precise wavelength control. Contact: Nick Grupido, Vice President Sales & Marketing, nick.grupido@rigaku.com; John McGill, President, john.mcgill@rigaku.com

**SPIE provided more than \$5.2 million in support of education and outreach programs in 2015.**

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Hands on Optics (HOO): K-12 outreach  
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International Centre for Theoretical Physics (ICTP) Winter College  
Visiting Lecturer Program

[www.spie.org/altruism](http://www.spie.org/altruism)

**SPIE.**

SPIE is the international society  
for optics and photonics.

## Sage Design Automation, Inc. #302

**SPIE** Corporate Member

2075 De La Cruz Blvd Ste 105, Santa Clara, CA, 95050 United States

+1 408 727 6294; fax +1 508 727 6288  
info@sage-da.com; www.sage-da.com

### Featured Product: iDRM: Software platform for design-process-technology co-development and co-optimization

iDRM from Sage-DA is a unique software platform that enables technologists to quickly capture design rules, analyze interactions and explore tradeoffs between technology and design constraints. With iDRM you can develop a complete design rule manual and automatically generate a full DRC runset. iDRM also automatically generates a correct-by-construction set of test layouts for systematic coverage of DRC runsets. The platform also provides pattern extraction, classification and characterization. Contact: Coby Zelnik, c.zelnik@sage-da.com; Kristen Frederick, k.frederick@sage-da.com

### Conference Sponsor

## SCREEN SPE USA, LLC #116

820 Kifer Rd Ste B, Sunnyvale, CA, 94086-5214 (USA)  
+1 408 523 9140; fax +1 408 523 9150

inquiries@screen-spe.com; www.screen.co.jp/eng/spe/index.html

### Featured Product: Coat/Develop Track Equipment: SOKUDO DUO & 80EX spin-on films, resist, DSA processes

SCREEN SPE USA, LLC is U.S. subsidiary of SCREEN Semiconductor Solutions Co., Ltd., Japan. SCREEN Semiconductor Solutions is the semiconductor equipment business from its predecessor, Dainippon Screen (SOKUDO). Core technologies in etching and photolithography have been cultivated over the years, as a specialized manufacturer of semiconductor production equipment in various areas such as wafer cleaning equipment, lithography equipment and anneals, and is one of the world's top 10 suppliers. Contact: Charles Pieczulewski, Bus. Mngt. Div. - Track Products, charles@prp.screen.co.jp; Laszlo Mikulas, VP Sales (USA), laszlo.mikulas@screen-spe.com

## Shin-Etsu MicroSi, Inc. #222

10028 S 51st St, Phoenix, AZ, 85044-5203 (USA)  
+1 480 893 8898; fax +1 480 893 8637

info@microsi.com; www.microsi.com

Contact: Edwin Nichols, Product Marketing Manager

## solar-semi GmbH #327

Robert-Gerwig-Str 9, Radolfzell, 78315 Germany  
+49 7732 97898 0; fax +49 7732 97898 99  
info@solar-semi.com; www.solar-semi.com

solar-semi systems are based on standardized platforms, which allow a wide range of individual configurations for processing and handling of fragile substrates used in the semiconductor-, MEMS, piezoMEMS, OLED display and similar industries as well as in R&D. Our lithography processing equipment is suitable for applications like spin coating, spray coating, baking, priming, developing, substrate cleaning, lift-off and stripping of various substrate sizes and materials. [www.solar-semi.com](http://www.solar-semi.com)

## Solid State Technology

#111

1786 18th St, San Francisco, CA, 94107 United States  
+1 415 255 0390; fax +1 415 255 9214  
info@electroig.com; www.solid-state.com

### Featured Product: Solid State Technology

Reach the largest, most qualified community of decision makers for semiconductor and electronics manufacturing worldwide through the magazine, email newsletters, website, webcasts and The ConFab Conference & Networking event. Topics include Advanced Packaging, MEMS, LEDs and Displays as well as all the current topics trending in the industry. Contact: Kerry Hoffman, khoffman@extensionmedia.com for advertising information or Sabrina Straub, sstraub@extensionmedia.com for The ConFab or webcasts.

## SwissLitho AG

#103

**SPIE** Corporate Member

Technoparkstr 1, Zürich, 8005 Switzerland  
+41 774347363  
info@swisslitho.ch; www.swisslitho.com

Contact: Felix Holzner, CEO

## Synopsys, Inc.

#206

**SPIE** Corporate Member

690 E Middlefield Rd, Mountain View, CA, 94043 (USA)  
+1 650 584 5000; fax +1 650 584 4102  
info@synopsys.com; www.synopsys.com

### Featured Product: Proteus ILT, Proteus LRC, CATS, Sentaurus Lithography

Synopsys provides industry-proven EDA solutions to meet the demands of today's advanced IC manufacturing processes while setting the standard in platform flexibility to enable innovative solutions for next generation technology nodes. Synopsys' comprehensive Mask Synthesis, Mask Data Preparation, TCAD and Yield Management tools provide leading-edge performance, accuracy, quality, and cost of ownership for all your production and development needs. Contact: Manufacturing@synopsys.com

*Conference App, and Wi-Fi Sponsor*

## Tokyo Electron Limited

#226

2400 Grove Blvd, Austin, TX, 78741-6500 United States  
+1 512 750 8219; fax +1 512 424 1001  
www.tel.com

### Featured Product: Coaters / developers for 100 - 450mm substrates including masks

Tokyo Electron (TEL) is a leading global supplier of innovative semiconductor and flat panel display production equipment. Product lines include coater/developers, thermal processing systems, plasma etchers, single wafer deposition systems, surface preparation systems and other equipment supporting the manufacturing and testing of semiconductors. Focused on productivity and cost of ownership, TEL offers advanced lithographic process and hardware solutions for 7nm nodes and beyond. Contact: Rob Crowell, Product Marketing Manager, rob.crowell@us.tel.com.

*Conference, Floor Plan Logo Sponsor; and Poster Reception - Co-Sponsor*

## Tokyo Ohka Kogyo America, Inc. (TOK America, Inc)

#110

**SPIE** Corporate Member

190 Topaz St, Milpitas, CA, 95035-5429 (USA)  
+1 408 956 9901; fax +1 408 956 9995  
user@tokamerica.com; www.tokamerica.com

### Featured Product: EUV, ArF immersion, ArF, KrF, i-line, g-line photoresists and supporting chemistries.

TOK America manufactures and markets ultra high-purity photo resists and auxiliary chemicals used in the fabrication of integrated circuits. TOK America is a US subsidiary of Tokyo Ohka Kogyo Co., Ltd., in Kawasaki, Japan, a world leader in the manufacture of photo resists, auxiliary liquid chemical products, and process equipment for the semiconductor circuit, semiconductor packaging, image sensor/MEMS, 3D packaging and display technology materials industries. Contact: Aaron Vickery, Senior Business Development Manager, aaron.vickery@tokamerica.com

## Vermont Photonics Technologies Corp.#314

**SPIE** Corporate Member

22 Browne Ct Unit 110, Brattleboro, VT, 05301 (USA)  
+1 802 275 5210; fax +1 802 275 5215  
mail@vermontphotonics.com; www.vermontphotonics.com  
Contact: Christian Guertin, Physicist

## Vistec Electron Beam GmbH

#211

Ilmstr 4, Jena, 07743 Germany  
+49 3641 7998 0; fax +49 3641 7998 222  
electron-beam@vistec-semi.com; www.vistec-semi.com

### Featured Product: Vistec SB254 & Vistec SB3050 series

Vistec Electron Beam GmbH provides leading technology solutions for advanced electron-beam lithography. Based on the Variable Shaped Beam (VSB) principle, the electron-beam lithography systems are mainly utilized for semiconductor applications and advanced research as silicon direct write, compound semiconductor, mask making as well as integrated optics and several new emerging markets. The company is located in Jena, Germany and maintains service & support centers in Europe, Taiwan & in the US. Contact: Ines Stolberg, Manager Product Management & Marketing, electron-beam@vistec-semi.com; Kevin Grens, Business Development Manager, electron-beam@vistec-semi.com

## Zygo Corporation

#130

**SPIE** Corporate Member

Laurel Brook Road, Middlefield, CT, 06455-1291 (USA)  
+1 860 347 8506; fax +1 860 347 8372  
inquire@zygo.com; www.zygo.com

Zygo Corporation is a worldwide supplier of optical metrology instruments, precision optics, and electro-optical design and manufacturing services, providing productivity and yield improvement solutions for manufacturers of precision components for a variety of industries. Zygo Corporation provides a wide range of inspection, surface analysis, precision displacement measurement, and automated solutions. Contact: Ernesto Abruna, Product Manager, eabruna@zygo.com; David Melton, Director of Sales, dmelton@zygo.com

# PRODUCT CATEGORIES

## ASTRONOMY

Vistec Electron Beam GmbH

## BASIC RESEARCH, SCIENCE

attocube systems Inc.  
Integrated Micro Materials  
King Industries Inc.  
Materials Design, Inc.  
Nano-Master, Inc.  
Raith America, Inc.  
Tokyo Ohka Kogyo America, Inc.  
(TOK America, Inc)  
Vistec Electron Beam GmbH

## BIOMEDICAL, MEDICAL IMAGING, HEALTH CARE

attocube systems Inc.  
Berliner Glas KGaA Herbert Kubatz GmbH & Co.  
ibss Group, Inc.  
Integrated Micro Materials  
LouwersHanique

## CAMERAS AND IMAGING SYSTEMS

Berliner Glas KGaA Herbert Kubatz GmbH & Co.

## CHEMICAL AND BIOLOGICAL ANALYSIS

Fine Semitech Corp.

## COMMUNICATIONS & NETWORKING

Fine Semitech Corp.

## COMPUTING SYSTEMS, DATA PROCESSING

attocube systems Inc.  
LouwersHanique

## COMPUTING, DATA PROCESSING HARDWARE

Carl Zeiss SMT GmbH

## CONSULTING SERVICES

Fine Semitech Corp.  
Integrated Micro Materials  
Materials Design, Inc.

## CONSUMER ELECTRONICS

Brewer Science

## DEFENSE, SECURITY, LAW ENFORCEMENT

Inspectrology LLC

## DETECTORS, SENSORS

Brewer Science

## DISPLAYS

Fine Semitech Corp.  
Nano-Master, Inc.

## DISTRIBUTOR, RESELLER, INTEGRATOR

Integrated Micro Materials

## EARTH SCIENCES, ENVIRONMENTAL MONITORING, CLIMATE

Berliner Glas KGaA Herbert Kubatz GmbH & Co.

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Vistec Electron Beam GmbH

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Brewer Science  
Inspectrology LLC

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Abeam Technologies, Inc.

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Berliner Glas KGaA Herbert Kubatz GmbH & Co.

## LASER INDUSTRY

Berliner Glas KGaA Herbert Kubatz GmbH & Co.  
Fine Semitech Corp.  
Integrated Micro Materials  
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## LASERS AND SYSTEMS

LouwersHanique

## LED, OLED, NON-LASER LIGHT SOURCES

Gudeng Precision Industrial Co., Ltd.

## LITHOGRAPHIC EQUIPMENT

Abeam Technologies, Inc.  
Berliner Glas KGaA Herbert Kubatz GmbH & Co.  
Brewer Science  
Canon U.S.A., Inc.  
Carl Zeiss SMT GmbH  
Fine Semitech Corp.  
Gudeng Precision Industrial Co., Ltd.  
Nano-Master, Inc.  
Pozzetta, Inc.  
Raith America, Inc.  
SCREEN SPE USA, LLC  
Tokyo Ohka Kogyo America, Inc.  
(TOK America, Inc)  
Vistec Electron Beam GmbH

## MACHINE VISION, FACTORY AUTOMATION

Berliner Glas KGaA Herbert Kubatz GmbH & Co.  
Canon U.S.A., Inc.

## MATERIALS PROCESSING, LASERS IN MANUFACTURING

attocube systems Inc.  
LouwersHanique  
Nano-Master, Inc.

## MATERIALS, ABRASIVES, CHEMICALS

Brewer Science  
Fine Semitech Corp.  
Integrated Micro Materials  
JSR Micro, Inc.  
King Industries Inc.  
Tokyo Ohka Kogyo America, Inc.  
(TOK America, Inc)

## MICROSCOPES

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attocube systems Inc.  
Carl Zeiss SMT GmbH  
Inspectrology LLC  
Raith America, Inc.

## MICROTECHNOLOGY

Nano-Master, Inc.  
Tokyo Ohka Kogyo America, Inc.  
(TOK America, Inc)  
Vistec Electron Beam GmbH

## MISC CONSUMABLES AND EQUIPMENT

Gudeng Precision Industrial Co., Ltd.  
ibss Group, Inc.

## NANOTECHNOLOGY PRODUCTS

Abeam Technologies, Inc.  
Integrated Micro Materials  
Nano-Master, Inc.  
Tokyo Ohka Kogyo America, Inc.  
(TOK America, Inc)  
Vistec Electron Beam GmbH

## OPTICAL COATINGS, THIN FILMS

JSR Micro, Inc.  
Nano-Master, Inc.

## OPTICAL COMPONENTS - FILTERS, MIRRORS, OTHER

LouwersHanique

## OPTICAL COMPONENTS - LENSES

Berliner Glas KGaA Herbert Kubatz GmbH & Co.

## OPTICAL DESIGN AND ENGINEERING

Abeam Technologies, Inc.

## OPTICAL FABRICATION EQUIPMENT

LouwersHanique

## OPTICS MANUFACTURING

Fine Semitech Corp.  
LouwersHanique  
Nano-Master, Inc.  
Vistec Electron Beam GmbH

## OPTOMECHANICAL COMPONENTS, DEVICES

Berliner Glas KGaA Herbert Kubatz GmbH & Co.

## PHOTONIC INTEGRATION

Fine Semitech Corp.

## POSITIONING EQUIPMENT, MOTION CONTROL AND ACCESSORIES

attocube systems Inc.  
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## SEMICONDUCTOR MANUFACTURING

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Canon U.S.A., Inc.  
Carl Zeiss SMT GmbH  
Fine Semitech Corp.  
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JSR Micro, Inc.  
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## SPIE EVENT POLICIES

# Acceptance of Policies and Registration Conditions

The following Policies and Conditions apply to all SPIE Events. As a condition of registration, you will be required to acknowledge and accept the SPIE Registration Policies and Conditions contained herein.

### Granting Attendee Registration and Admission

SPIE, or their officially designated event management, in their sole discretion, reserves the right to accept or decline an individual's registration for an event. Further, SPIE, or event management, reserves the right to prohibit entry or remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, who in their sole opinion are not, or whose conduct is not, in keeping with the character and purpose of the event. Without limiting the foregoing, SPIE and event management reserve the right to remove or refuse entry to any attendee, exhibitor, representative, or vendor who has registered or gained access under false pretenses, provided false information, or for any other reason whatsoever that they deem is cause under the circumstances.

### SPIE Safe Meeting and Misconduct Policy

SPIE is a professional, not-for-profit society committed to providing valuable and safe conference and exhibition experiences. SPIE is dedicated to equal opportunity and treatment for all its members, meeting attendees, staff, and contractors. Attendees are expected to be respectful to other attendees, SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be addressed promptly and seriously. Consequences up to and including expulsion from the event as appropriate will be implemented immediately.

The SPIE anti-harassment policy can be found at <http://spie.org/policy>.

### Reporting of Unethical or Inappropriate Behavior

SPIE is an organization with strong values of responsibility and integrity. Our Harassment Policy, Ethics Statement, and Code of Professional Conduct contain general guidelines for behavior and for conducting business with the highest standards of ethics.

Onsite at a SPIE meeting, contact any SPIE Staff member with concerns or questions for thorough follow-up. If you feel in immediate danger, please dial 911 for police intervention.

SPIE has established a confidential reporting system for staff and all meetings participants to raise concerns about possible unethical or inappropriate behavior within our community. Complaints may be filed by phone at +1-888-818-6898 or at [www.SPIE.ethicspoint.com](http://www.SPIE.ethicspoint.com) and, if preferred, may be made anonymously.

### Identification

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials.

Individuals are not allowed to pick up badges for attendees other than themselves. 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.

### Capture and Use of a Person's Image

By registering for an SPIE event, I grant full permission to SPIE to capture, store, use, and/or reproduce my image or likeness by any audio and/or visual recording technique (including electronic/digital photographs or videos), and create derivative works of these images and recordings in any SPIE media now known or later developed, for any legitimate SPIE marketing or promotional purpose.

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Registrants for paid elements of the event, who do not provide a method of payment, will not be able to complete their registration. Individuals with incomplete registrations will not be able to attend the conference until payment has been made. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks and wire transfers. Onsite registrations can also pay with Cash.

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Persons under the age of 18 including babies, carried or in strollers, and toddlers are not allowed in technical or networking events. Anyone 18 or older must register as an attendee. All technical and networking events require a valid conference badge for admission.

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For safety and insurance reasons:

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- Children 14 and older, accompanied by an adult, will be allowed in the exhibition area during open exhibition hours only.
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At SPIE events where wireless is included with your registration, SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

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## Mobile Phones and Related Devices Policy

Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

## Smoking

For the health and consideration of all attendees, smoking, including e-cigarettes, is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking and e-cigarettes in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

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## Event Cancellation

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

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Tower Optical Corp.  
TRIOPTICS GmbH  
TRUMPF Inc.  
Tydex  
UAB Altechna  
Umicore Optical Materials USA, Inc.  
UNI Optics Co., Ltd.  
United Lens Co., Inc.  
Univ. of Rochester  
Universal Photonics Inc.  
UpTek Solutions Corp.  
Valtech Corp.  
Varioptic-A BU of Parrot SA  
Vermont Photonics Technologies Corp.  
Vescent Photonics Inc.  
Viavi Solutions Inc.  
VisiMax Technologies, Inc.  
Vision Components GmbH  
Vista Optronics Inc.

Vital Materials Co., Ltd.  
Vixar Inc.  
VM-TIM GmbH  
Volpi USA  
VORTRAN Laser Technology, Inc.  
Wacom Corp.  
Wasatch Photonics, Inc.  
Wavelength Electronics, Inc.  
Wavelength Opto-Electronic (S) Pte. Ltd.  
Webb Holdings LLC  
World Star Tech  
Wuhan Yangtze Soton Laser Co., Ltd.  
WZW-Optic AG  
XEI Scientific, Inc.  
Xenics NV  
XIMEA Corp.  
Xonox Technology GmbH  
XYALIS  
Yenista Optics Inc.  
Z & Z Optoelectronics Tech. Co., Ltd.  
ZC Optoelectronic Technologies Ltd.  
Zemax, LLC  
Zeta Instruments  
ZEUS  
Z-LASER Optoelektronik GmbH  
Z-LASER-America Inc.  
Zomega Terahertz Corp.  
Zurich Instruments AG  
Zygo Corporation

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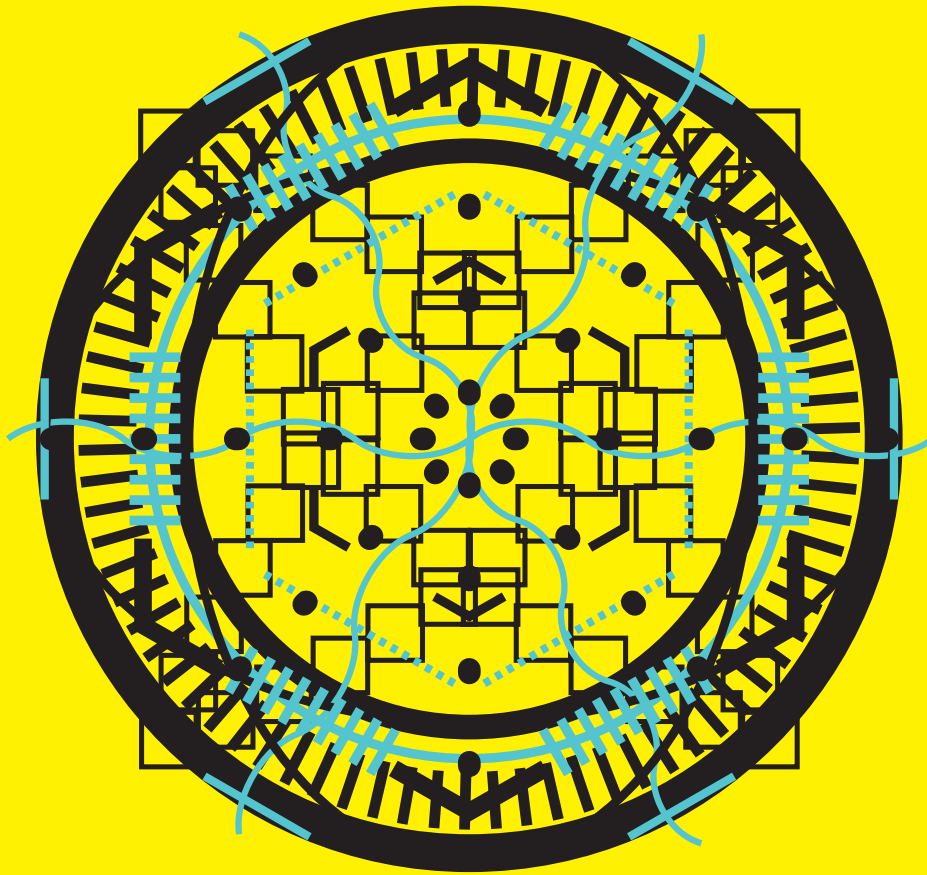
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