



**SPIE**<sup>®</sup>

# 2013 Advanced Lithography

—  
Exhibition Guide

Moving Technology to Market™

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**Exhibition Dates**

26–27 February 2013

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**Conference and Courses**

24–28 February 2013

San Jose Convention Center, San Jose, California, USA



# Welcome

**SPIE**   
Advanced Lithography

Sponsored by



Advanced Lithography 2013  
Promotional Partners

**Mazik Media**

**MEMS and Nanotechnology Exchange**

**Photonics Media**

**Photonics Online**

**Solid State Technology**

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

*SPIE would like to express its deepest appreciation to the symposium chairs, conference chairs, program committees, and session chairs 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.*

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

<p>Tuesday Lunch Co-Sponsor</p>  <p>Electronic Materials www.dow.com</p>	<p>Wi-Fi</p> <p><b>HITACHI</b> Inspire the Next</p> <p>www.hitachi-hta.com</p>  <p><b>TOKYO ELECTRON</b> www.tel.com</p>	<p>Plenary Session</p> <p><b>ASML</b> www.asml.com</p>
<p>Advanced Etch Technology for Nanopatterning II Conference</p>  <p>www.lamrc.com</p>	<p>Extreme Ultraviolet (EUV) Lithography IV Conference</p> <p><b>CYMER</b> www.cymer.com</p>	<p>Lanyards</p>  <p>www.mentor.com</p>
<p>Advances in Resist Materials and Processing Technology XXIV Conference</p>  <p>www.tokamerica.com</p>	<p>Conference Bag</p> <p><b>CYMER</b> www.cymer.com</p>	<p>Meter Board</p> <p><b>HITACHI</b> Inspire the Next www.hitachi-hta.com</p>
<p>Alternative Lithographic Technologies V Conference</p>  <p>www.azem.com</p>	<p>Conference Bag Pen</p>  <p>www.nikonprecision.com</p>	<p>Stairway Strips</p> <p><b>FUJIFILM</b> www.fujifilm-ffem.com</p>
<p>Coffee Break</p> <p><b>ASML</b> www.asml.com</p> <p><b>KLA Tencor</b> www.kla-tencor.com</p>	<p>Exhibitor Lounge</p> <p><b>HITACHI</b> Inspire the Next www.hitachi-hta.com</p>	<p>Banner</p> <p><b>HITACHI</b> Inspire the Next www.hitachi-hta.com</p> <p><b>KLA Tencor</b> www.kla-tencor.com</p>
<p>Tuesday Poster Reception</p>  <p><b>TOKYO ELECTRON</b> www.tel.com</p>	<p>Exhibition Bag</p>  <p>www.smt.zeiss.com/sms</p>	 <p>www.nikonprecision.com</p>
<p>Wednesday Poster Reception</p>  <p>www.azem.com</p>  <p>www.tokamerica.com</p>	<p>Hotel Room Key</p> <p><b>CYMER</b> www.cymer.com</p> <p>Optical Microlithography XXVI Conference</p> <p><b>CYMER</b> www.cymer.com</p>	<p>Breakfast Sponsor</p>  <p>www.appliedmaterials.com</p>
<p>Internet Pavilion</p>  <p>www.jeolusa.com</p>	<p>Luggage Tags</p>  <p>www.appliedmaterials.com</p>	<p>General Refreshments</p> <p>ASML</p> <p>Hitachi High Technologies</p> <p>Micro Lithography Inc.</p> <p>Solid State Technology</p> <p>TNO Science and Industry</p>



# General Information

## Exhibition Hours

Tuesday ..... 10:00 am to 5:00 pm  
Wednesday ..... 10:00 am to 4:00 pm


## Onsite Registration and Badge Pick-up Hours

Location – San Jose Convention Center Concourse 2 Level

Sunday 24 February ..... 7:00 am to 5:00 pm  
Monday 25 February ..... 7:00 am to 4:00 pm  
Tuesday 26 February ..... 7:30 am to 5:00 pm  
Wednesday 27 February ..... 7:30 am to 4:00 pm  
Thursday 28 February ..... 7:30 am to 4:00 pm

## Coffee Breaks | Breakfast Breads

7:30 to 8:30 am Monday – Thursday (Breakfast Breads)

Tuesday breakfast sponsored by  APPLIED MATERIALS

10:00 am and 3:00 pm, Sunday – Thursday (Coffee Breaks)  
Convention Center Ballroom Concourse/Exhibition Hall

Sponsored by  ASML  KLA Tencor

Complimentary coffee will be served daily, at 7:30am, 10:00 am and 3:00 pm. Check individual conference listings for exact times and locations.

## Food & Refreshments for Purchase

Convention Center Concourse and Exhibition Hall Concession Stand


11:00 am to 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 1

Hosted lunches will be served in the Exhibition Hall at the following times:

Tuesday and Wednesday ..... 11:30 am to 1:00 pm

Tuesday lunch co-sponsored by  Dow  
Electronic Materials

Please check the individual technical 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 located in Concourse 1.

## Cash Lunches and Exhibition Concessions

Exhibition Hall 1

A cash quick-lunch stand is available in the foyer of the Convention Center during the week.

Exhibition Concessions are located in the back of the exhibition halls on Tuesday-Wednesday, featuring domestic and international cuisine. Choices include hot and cold snacks, beverages, deli-type sandwiches, salads, hot entrees, and pastries. Concessions will be available during exhibition hours. Purchase tickets at the SPIE Cashier.

## Desserts

Complimentary tickets for dessert snacks are included in course and conference attendee registration packets.

## Internet Access

Convention Center Concourse

## Internet Pavilion

Sponsored by  JEOL

SPIE will have a complimentary Internet Pavilion at the Convention Center from Sunday through Thursday during registration hours. Attendees can use provided workstations or hook up their laptop to an Ethernet connection to access the Internet.

## Complimentary Internet Wireless Access

Sponsored by  HITACHI Inspire the Next  TEL TOKYO ELECTRON

SPIE is pleased to provide complimentary wireless access to the Internet for all conference attendees bringing 802.11b wireless-enabled laptops or PDAs. Coverage will be available Sunday through Thursday in the Convention Center Ballroom Concourse.

Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation.

## SPIE Bookstore

Convention Center Concourse 1

The SPIE Bookstore is your source for the latest SPIE Press Books, Proceedings, and Education and Professional Development materials. Become an SPIE Member, explore the Digital Library, take home a free SPIE poster, or buy a souvenir (tie, t-shirt, educational toys, and more).

## Underage Persons on Exhibition Floor Policy

For safety and insurance reasons, no one under the age of 16 will be allowed in the exhibition area during move-in and move-out. During open exhibition hours, only children over the age of 12 accompanied by an adult will be allowed in the exhibition area.

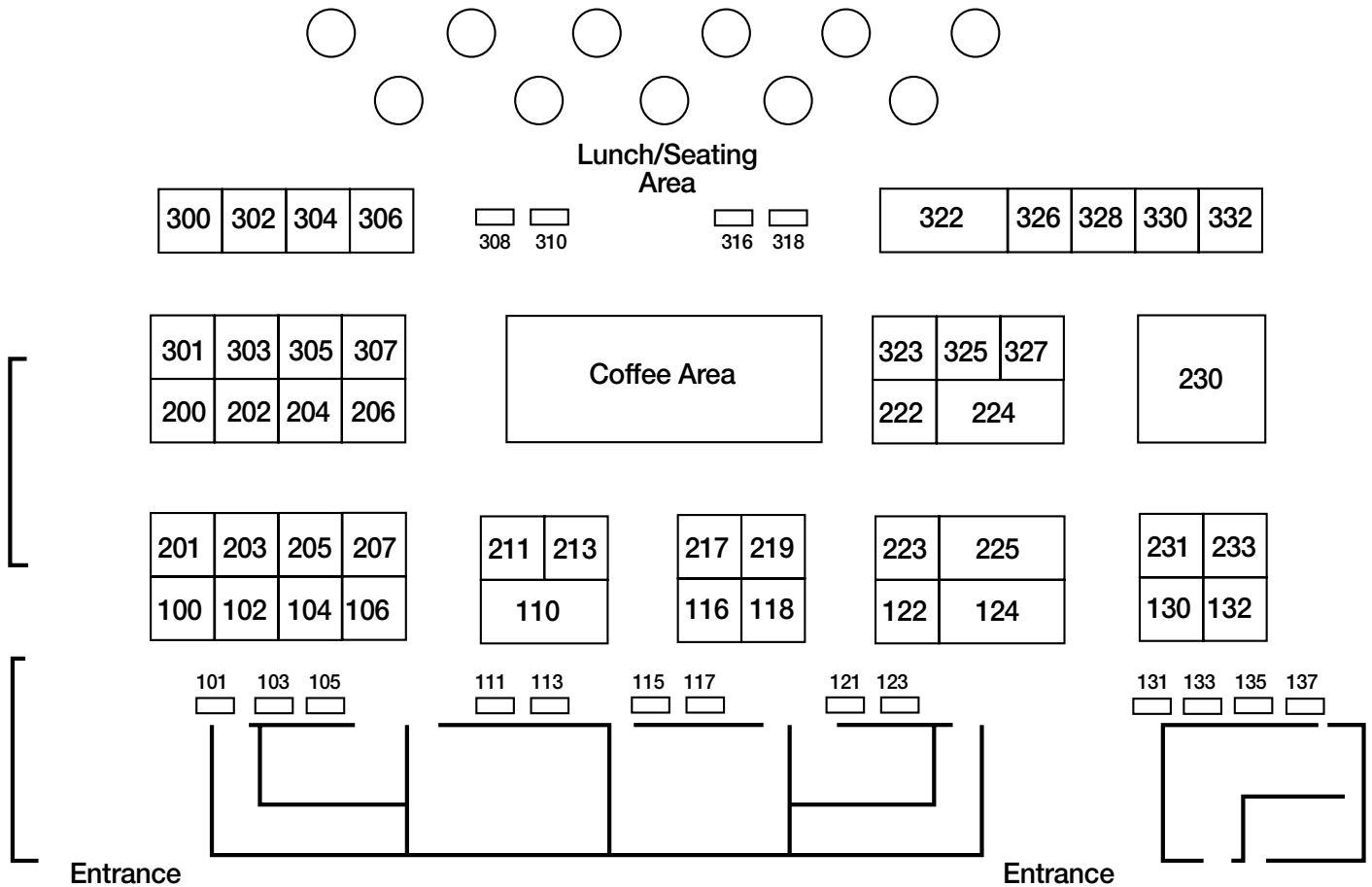
## Unauthorized Solicitation Policy

Unauthorized solicitation in the Exhibition Hall is prohibited. Any non-exhibiting manufacturer or supplier observed to be distributing information or soliciting business in the aisles, or in another company's booth, will be asked to leave immediately.

## 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>

# San Jose Convention Center · Exhibition Floor



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# Get Smart with Courses at SPIE Advanced Lithography

Relevant training | Proven instructors | Education you need to stay competitive in today's job market

- Choose from 14 courses and learn current approaches in EUV lithography, DSA, optical lithography, FEOL/MOL/BEOL lithography, and more
- SPIE Student Members receive 50% off course registration
- New courses in 2013 include Scatterometry and Applications in CD, OV and Focus Control; Chemistry and Lithography; Understanding Design-Pattern Interactions
- Earn CEUs to fulfill continuing professional education requirements



### 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 authorized 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.

SUNDAY	MONDAY	TUESDAY	THURSDAY
SC1099 <b>Chemistry and Lithography</b> (Okoroanyanwu) 8:30 am to 5:30 pm, \$670 / \$780	SC1030 <b>Interaction of Physical Design and Lithography</b> (Yuan) 1:30 pm to 5:30 pm, \$350 / \$405	SC1101 <b>Understanding Design-Patterning Interactions</b> (Gupta, Mallik, Torres) 1:30 pm to 5:30 pm, \$350 / \$405	SC103 <b>Chemically Amplified Resists</b> (Willson) 8:30 am to 5:30 pm, \$575 / \$685
SC1009 <b>Electron Beam Inspection - Principles and Applications in IC and Mask Manufacturing</b> (Xiao) 8:30 am to 12:30 pm, \$350 / \$405			SC616 <b>Practical Photoresist Processing</b> (Dammel) 8:30 am to 12:30 pm, \$350 / \$405
SC888 <b>EUV Lithography</b> (Bakshi, Ahn, Naulleau) 8:30 am to 5:30 pm, \$715 / \$825			
SC101 <b>Introduction to Microlithography: Theory, Materials, and Processing</b> (Willson, Bowden) 8:30 am to 5:30 pm, \$575 / \$685			
SC116 <b>Lithographic Optimization: A Theoretical Approach</b> (Mack) 8:30 am to 5:30 pm, \$655 / \$765			
SC992 <b>Lithography Integration for Semiconductor FEOL &amp; BEOL Fabrication</b> (Lin, Zhang) 8:30 am to 5:30 pm, \$575 / \$685			
SC1066 <b>Practical Modeling and Computational Lithography</b> (Lai) 8:30 am to 5:30 pm, \$575 / \$685			
SC885 <b>Principles and Practical Implementation of Multiple Patterning</b> (Dusa, Hsu) 8:30 am to 5:30 pm, \$575 / \$685			
SC1067 <b>Directed Self Assembly and its Application to Nanoscale Fabrication</b> (de Pablo, Nealey, Ruiz) 1:30 pm to 5:30 pm, \$350 / \$405			
SC1100 <b>Scatterometry and Applications in CD, OV and Focus Control</b> (Cramer, Turovets) 1:30 pm to 5:30 pm, \$350 / \$405			

**Register for Courses at the SPIE Cashier.**

# 2013 Advanced Lithography Exhibition Directory

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

#103

5286 Dunnigan Ct, Castro Valley, CA, 94546 United States  
+1 510 931 5550; fax +1 510 279 0076  
support@abeamtech.com; www.abeamtech.com

## Amuneal Manufacturing Corp.

#301

4737 Darrah Street, Philadelphia, PA, 19124 United States  
+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. We offer a number of standard component shields to our clients, however, our culture and capabilities allow us to manufacture and install unique custom shields ranging from prototypes and models to full-scale assemblies. Contact: Stuart Koch, Vice President Technical Products, stuartk@amuneal.com; Michael Adolf, Technical Sales Assistant, mikea@amuneal.com

*Coffee Break, Plenary, and  
General Refreshment Sponsor*

## ASML

SPIE Corporate  
Member

#306

8555 S. River Pkwy, Tempe, AZ, 85284 United States  
+1 480 383 4422; fax +1 480 383 3987  
information@asml.com; www.asml.com

ASML is the world's leading provider of lithography systems for the semiconductor industry, manufacturing complex machines that are critical to the production of integrated circuits or microchips. Headquartered in Veldhoven, the Netherlands, ASML designs, develops, integrates, markets and services these advanced systems, which continue to help our customers - the major chipmakers - reduce the size and increase the functionality of microchips, and consumer electronic equipment. Contact: Michael Pullen, Sr Communications Specialist, michael.pullen@asml.com; Ryan Young, Communications Manager, ryan.young@asml.com

## attocube systems Inc.

#200

SPIE Corporate  
Member

1918 Martin Luther King Jr Way, Berkeley, CA, 94704 United States  
+1 510 649 9245  
info@attocube.com; www.attocube.com

attocube is a worldwide supplier for ultra-precision nanopositioner and multi-axes interferometric sensors. With the introduction of the ECS series, attocube offers highest precision piezodrive technology with extremely rugged yet cost efficient design. attocube's patented fiber interferometer technology is being used in various applications such as extreme environmental positioning or micromachining.

## Benchmark Technologies

#219

7 Kimball Lane, Lynnfield, MA, 01940 United States  
+1 781 246 3303; fax +1 781 246 0308  
info@benchmarktech.com; www.benchmarktech.com

Benchmark supplies a variety of test reticles for yield enhancement, throughput improvement and process monitoring. Benchmark's Universal Matching and Phase Shift Focus Monitor reticles continue to be the industry standards. Reticles are also available for lithography tool resolution assessment, defect monitoring, exposure dose optimization and alignment mark evaluation. Benchmark also provides electrostatic measurement and reduction systems for reticles. Contact: Andrew Zanzal, VP Sales, azanzal@benchmarktech.com; Patrick Reynolds, President, preynolds@benchmarktech.com

## Brewer Science Inc.

#217

SPIE Corporate  
Member

2401 Brewer Drive, Rolla, MO, 65401 United States  
+1 573 364 0300; fax +1 573 364 6880  
info@brewerscience.com; www.brewerscience.com

Brewer Science is a global technology leader in creating, developing, and manufacturing specialty materials, equipment, and process solutions for applications in semiconductors, advanced packaging/3-D ICs, MEMS, sensors, displays, LEDs, and printed electronics. The company's 30 years of in-depth knowledge and expertise in materials science, chemistry, physics, optics, modeling, and process integration distinguish it from all other material suppliers worldwide. Visit us at www.brewerscience.com. Contact: Patti Shaw, Marketing Communications Manager, pshaw@brewerscience.com

# Exhibitor Directory

## Brion Technologies

#306

SPIE Corporate Member

4211 Burton Drive, Santa Clara, CA, 95054 United States  
+1 408 653 1500; fax +1 408 653 1501  
info@brion.com; www.brion.com

## Capitol Scientific Microfabrication Materials

#300

1711 Briercroft Court, Suite 140, Carrollton, TX, 75006 United States  
+1 972 428 5833; fax +1 972 428 5838  
brad.williams@capitolscientific.com; www.capitolscientific.com

### Featured Product: Lithography Materials

Distributors of photoresists and other lithography materials, process chemicals, clean room attire and consumables, liquid dispense equipment, laboratory equipment, and safety products. Contact: Brad Williams, CEO, brad.williams@capitolscientific.com; Ron Eakin, Business Development Manager, ron.eakin@capitolscientific.com

### Exhibition Bag Sponsor

## Carl Zeiss SMS GmbH

#224

Carl Zeiss Promenade 10, Jena, 07745 Germany  
+49 3641 64 2242  
www.zeiss.com/sms

### Featured Product: CDC32 for Critical Dimension Correction, AIMS™ 32-193i for Aerial Image Measurement

Carl Zeiss SMS is a leading global supplier of both metrology and manufacturing equipment. Core expertise in light and electron optics, complemented by a revolutionary femto-second laser technology form the foundation of a product portfolio comprising in-die metrology, actinic qualification, repair, and tuning of photomasks. The division is headquartered in Jena and has two further sites in Rossdorf near Darmstadt and in Karmiel / Israel. Contact: James Polcyn, Sales Manager, polcyn@smt.zeiss.com; Leila Hammad, Marketing Manager, hammad@smt.zeiss.com

## DNS Electronics, LLC / SCREEN / SOKUDO

#130

820 Kifer Road, Suite B, Sunnyvale, CA, 94086 United States  
+1 408 523 9140; fax +1 408 523 9150  
info@sokudospeed.com; www.sokudo.com

## Energetiq Technology, Inc.

#123

SPIE Corporate Member

7 Constitution Way, Woburn, MA, 01801 United States  
+1 781 939 0763; fax +1 781 939 0769  
info@energetiq.com; www.energetiq.com

Energetiq Technology, Inc. is the leading manufacturer of high-reliability, stable light sources for advanced lithography. Energetiq's EQ-10 Electrodeless Z-Pinch™ EUV Source is the market-leading source for EUV metrology and testing applications, and Energetiq's unique Laser-Driven Light Source (LDLS™) products feature broadband output from 170nm in the deep UV, through visible and into the infrared, for resist and optics testing. For more information, visit www.energetiq.com.

## Fortrend Engineering

#135

687 N. Pastoria Ave., Sunnyvale, CA, 94085 United States  
+1 408 734 9311  
sales@fortrend.com; www.fortrend.com

### Stairway Strips Sponsor

## FUJIFILM Electronic Materials

#322

SPIE Corporate Member

80 Circuit Drive, North Kingstown, RI, 02852 United States  
+1-800-553-6546; fax +1-401-294-2269  
spie2013@fujifilm-ffem.com; www.fujifilm-ffem.com

### Featured Product: Advanced Negative-tone Imaging Photoresist and Ancillaries

FUJIFILM Electronic Materials is a leading supplier of materials to the semiconductor industry. It has distinguished itself by serving the world leaders in these key markets with forward looking solutions to meet their advanced materials needs. Unique in the breadth of its product line, the company has major market positions in photoresists, polyimides, formulated products, thin film systems, e-beam resists and color filter array materials for image sensors. Contact: spie2013@fujifilm-ffem.com

## GenSys GmbH

#326

Eschenstr 66, Taufkirchen Muenchen, D-82024 Germany  
+49 89 3309197 60  
info@genisys-gmbh.com; www.genisys-gmbh.com

## Gudeng Precision Industrial Co., Ltd. #102

SPIE Corporate Member

9F, No. 2, Sec. 4, Jhongyang Rd., Tucheng District, Taipei City, 236 Taiwan  
+886 2 2268 9141; fax +886 2 2269 1943  
sales@gudeng.com; www.gudeng.com.tw

## Halocarbon Products Corporation

#223

SPIE Corporate Member

887 Kinderkamack Rd, River Edge, NJ, 07661 United States  
+1 201 262 8899  
info@halocarbon.com

### Featured Product: Hexafluoroacetone Derivatives

Halocarbon is one of the world's leading producers of specialty fluorochemicals in the US. Halocarbon products include inert lubricants and building blocks for pharmaceutical and agricultural chemical manufacturing and the electronics/semiconductor industry. For more information, visit us at www.halocarbon.com or contact the company at +1-201-262-8899. Contact: Anthony Nigro, Account Manager, anigro@halocarbon.com

## Heraeus Daychem

#203

970 Industrial Park Drive, Vandalia, OH, 45377-9776 United States  
+1 937 264 1000; fax +1 937 264 1700  
sales@daychem.com; www.daychem.com



## Ibss Group, Inc. #105

**SPIE** Corporate Member

1559B Sloat Blvd. #270, San Francisco, CA, 94132 United States  
+1 415 566 5774; fax +1 415 566 9779  
admin@ibssgroup.com; www.ibssgroup.com

**Featured Product: GV10x Asher is a unique source that produces high power and low pressure plasma operation.**

In 2007 ibss Group began cooperating with an inventor of a unique, patented IC plasma source. In that time ibss developed and produced the GV10x, next generation in situ downstream asher. Competitively priced the GV10x Downstream Asher reduces carbon & hydrocarbon [HC] contamination 10 to 20 times more effectively than traditional methods at vacuum pressure safe for TMP operation. Contact: Vincent Carlino, President, vince.carlino@ibssgroup.com; Elena Grankina, Office Manager, elena.grankina@ibssgroup.com

## Inko Industrial Corp. #131

695 Vaqueros Ave, Sunnyvale, CA, 94085 United States  
+1 408 830 1041; fax +1 408 830 1058  
sales@pellicle-inko.com; www.pellicle-inko.com

## Inspectrology LLC #330

**SPIE** Corporate Member

144 North Rd Ste 1450, Sudbury, MA, 01776 United States  
+1 978 897 1775  
info@inspectrology.com; www.inspectrology.com

**Featured Product: IVS 185 CD, Overlay, and Structural Metrology System**

Inspectrology provides sales, service, and support of new and refurbished CD, overlay, and structural metrology for 3-8 inch wafers. Custom handling options make our systems ideal for MEMS, LED, Compound Semiconductor, as well as solar applications. Contact: Mike Kessler, VP Sales and Service, mkessler@inspectrology.com; Paul Knutrud, VP Marketing and Finance, PKNUTRUD@inspectrology.com

## J.A. Woollam Co., Inc. #202

645 M Street, Ste 102, Lincoln, NE, 68508 United States  
+1 402 477 7501  
sales@jawaollam.com; www.jawaollam.com

## JSR Micro, Inc. #124

**SPIE** Corporate Member

1280 N. Mathilda Ave, Sunnyvale, CA, 94089 United States  
+1 408 543 8800  
info@jsrmicro.com; www.jsrmicro.com

**Featured Product: JSR designs and manufacturers innovative photoresists, developers, and specialty chemicals.**

JSR Micro manufactures the industry's most innovative family of photoresists, developers, and specialty chemicals for trilayer, immersion materials, and chemical shrink. When it comes to creating customized electronics materials solutions, JSR is second to none. We are in the business of delivering individualized materials solutions for our customers and partners. Our approach is Innovation One-on-One - discovering and adapting product technologies to fit specific customer requirements. Contact: Mark Slezak, VP, Sales & Technology, mslezak@jsrmicro.com; Missy Bindseil, Marketing Communications, mbindseil@jsrmicro.com

## King Industries, Inc. #302

1 Science Road, Norwalk, CT, 06460 United States  
+1 203 866 5551; fax +1 203 866 1268  
info@kingindustries.com; www.kingindustries.com

## MEMS & Nanotechnology Exchange #111

1895 Preston White Dr. #100, Reston, VA, 20191 United States  
+1 703 262 5375  
business@mems-exchange.org; www.mems-exchange.org

*Lanyard Sponsor*

## Mentor Graphics Corp. #225

**SPIE** Corporate Member

8005 SW Boeckman Rd, Wilsonville, OR, 97070-7777 United States  
+1 503 685 7000; fax +1 503 685 1204  
sales\_info@mentor.com; www.mentor.com

**Featured Product: Calibre(r) pxOPC: optimized pixelated masks for extreme low-k1 litho in cost-effective tapeout flow.**

Mentor is the complete partner for IC manufacturing success. Mentor helps customers achieve the fastest time-to-mask with best-in-class technology, comprehensive programmable solutions based on open standards, process and flow development support, and continuous innovation. 34 fabs have chosen Mentor as their partner. Find out how a partnership with Mentor can accelerate your success. Get more info at www.mentor.com. Contact: Gene Forte, Technology Communications Manager, gene\_forte@mentor.com; Beth Martin, Content Manager, beth\_martin@mentor.com

*General Refreshment Sponsor*

## Micro Lithography, Inc. #213

1257 Elko Drive, Sunnyvale, CA, 94089 United States  
+1 408 747 1769; fax +1 408 747 1978  
www.mliusa.com

**Featured Product: Pellicles**

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; Diana Tjin, Sales Administrative Manager, diana.tjin@mliusa.com

## micro resist technology GmbH # 332

Köpenicker Str 325, Berlin, 12555 Germany  
+0049 30 64 16 70 101  
j.vongrzymala@microresist.de

## MicroChem Corp. #307

90 Oak St, Newton, MA, 02464 United States  
+1 617 965 5511; fax +1 617 831 2354  
sales@microchem.com

# Exhibitor Directory

## Mirero Inc. #115

U-Tower #2905, 120 Heungdeok Junghang-ro, Giheung, Yongin, Kyonggi, 446-982 Korea, Republic of  
+82 31 215 2905; fax +82 31 216 2905  
sales@mirero.co.kr; www.mirero.co.kr

## Mitsui Chemicals America, Inc. #101

2099 Gateway PI Ste 300, San Jose, CA, 95110-1017 United States  
+1 408 487 2891; fax +1 408 453 0684  
info@mitsuichem.com; www.mitsuichemicals.com

## Molecular Imprints, Inc. #110

**SPIE** Corporate Member

1807 W Braker Ln, Bldg C-100, Austin, TX, 78758 United States  
sales@molecularimprints.com; www.molecularimprints.com

World's Market and Technology Leader for High-resolution, Low Cost-of-Ownership sub-30nm Nanoimprint Lithography Systems. Contact: Paul Shaver, Director of Sales, pshaver@molecularimprints.com; Paul Hofemann, V.P. Marketing & Business Dev., phofemann@molecularimprints.com

## Nanometrics Inc. #325

1550 Buckeye Dr, Milpitas, CA, 95035-7418 United States  
+1 408 545 6000  
contact@nanometrics.com; www.nanometrics.com

Leading provider of high-performance process control metrology and inspection systems used primarily in the fabrication of semiconductors, HB-LEDs, data storage devices and solar photovoltaics. Nanometrics' automated and integrated systems address numerous process control applications, including CD and film thickness measurement, device topography, defect inspection, overlay registration, and analysis of various other film properties such as optical, electrical and material characteristics.

## OMG Cyantek #233

**SPIE** Corporate Member

3055 Osgood Ct, Fremont, CA, 94539 United States  
+1 510 651 3341; fax +1 510 651 3398  
sales@cyantek.com; www.cyantek.com

## Optical Support, Inc. #133

**SPIE** Corporate Member

1671 S Research Lp Ste 133, Tucson, AZ, 85710-6771 United States  
+1 520 546 0642  
sgarcia@opticalsupport.biz; www.opticalsupport.biz

## Opto Diode Corp. #323

**SPIE** Corporate Member

750 Mitchell Rd, Newbury Park, CA, 91320 United States  
+1 805 499 0335  
sales@optodiode.com; www.optodiode.com

## Owens Design #113

47427 Fremont Blvd, Fremont, CA, 94538 United States  
+1 510 659 1800; fax +1 510 659 1896  
sales@owensdesign.com; www.owensdesign.com

### Featured Product: Design and Manufacture of custom complex automated systems for OEMs and product manufacturers

Owens Design has been working with clients in major technology industries for over 25 years to design and build the unique manufacturing systems they need. With over 1600 systems in the field, we have the experience and background to be your partner in creating a reliable system to implement your technology on your chosen substrates. From hard disk media, to semiconductor, solar (c-Si and thin film), LED, and related industries, we collaborate with your team, at your budget, in your time frame. Contact: Lauren Ravenscroft, Sales Manager, lravenscroft@owensdesign.com; Mark Danna, VP Sales, mdanna@owensdesign.com

## Pall Corp. #100

25 Harbor Park Drive, Port Washington, NY, 11050 United States  
+1 516 484 5400  
microelectronics@pall.com; www.pall.com

### Featured Product: New Product: 2 nm all HDPE PE-Kleen filter designed for reduced defects in advanced chemistries.

Pall offers a complete line of filtration, purification and separation technologies for liquids and gases used in lithography applications. Pall has demonstrated that these innovative technologies can significantly reduced defectivity. Find out how Pall can help you improve your lithography process. Contact: Michael Mesawich, VP Marketing, michael\_mesawich@pall.com

## Photonics Online #318

2591 Wexford-Bayne Road, Building II, Suite 305, Sewickley, PA, 15143 United States  
+1 724 940 7555; fax +1 724 940 7707  
info@photonicsonline.com; www.photonicsonline.com

## Pozzetta #207

3121 S Platte River Dr, Englewood, CO, 80110 United States  
+1 303 783 3172; fax +1 303 374 7342  
customerservice@pozzetta.com; www.pozzetta.com

### Featured Product: Photomask Compacts

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 Vasilades, Account Executive, artemis@pozzetta.com; Scott Reese, Account Executive, scott.reese@pozzetta.com

## Qoniac GmbH #201

**SPIE** Corporate Member

Fetscherstr. 72, Dresden, 01307 Germany  
+49 351 41893340; fax +49 351 41893341  
info@qoniac.com

## Rigaku Innovative Technologies, Inc. #308

1900 Taylor Road, Auburn Hills, MI, 48326 United States  
+1 248 232 6400; fax +1 248 232 6500  
info@rigaku.com; www.rigaku.com

## RION Co., Ltd. #303

3-20-41 Higashimotomachi, Kokubunji Tokyo, 185-8533 Japan  
+81 42 359 7458; fax +81 42 359 7448  
www.rion.co.jp/english

## Rudolph Technologies, Inc. #230

One Rudolph Rd, P.O. Box 1000, Flanders, NJ, 07836 United States  
+1 973 691 1300  
info@rudolphtech.com; www.rudolphtech.com

### Featured Product: JetStep Lithography System, a 2x reduction stepper for the advanced packaging market

Rudolph Technologies is a leader in the design, development, manufacture and support of defect inspection, advanced packaging lithography, process control metrology, and data analysis systems and software used by semiconductor device manufacturers worldwide. Rudolph provides a full-fab solution through its families of proprietary products that provide critical yield-enhancing information, enabling microelectronic device manufacturers to drive down the costs and time to market of their products. Contact: Mayson Brooks, SVP & GM, Advanced Packaging Lithography Business, mayson.brooks@rudolphtech.com; Ardy Johnson, VP, Marketing, ardy.johnson@rudolphtech.com

## SAES Pure Gas #132

4175 Santa Fe Rd, San Luis Obispo, CA, 93401-8115 United States  
+1 805 541 9299; fax +1 805 541 9399  
spg@saes-group.com; www.SaesPureGas.com

### Featured Product: EUV, Immersion, and Metrology Gas Purifiers covering N<sub>2</sub>, XCDA, CDA, H<sub>2</sub> and CO<sub>2</sub> purification

SAES Pure Gas manufactures gas purifiers for point-of-use and bulk gas purification. Gases purified include N<sub>2</sub>, XCDA, CDA, CO<sub>2</sub>, Inert Gases and many others. Impurities removed include H<sub>2</sub>O, O<sub>2</sub>, Volatile Acids, Volatile Bases, Volatile and Non-Volatile Hydrocarbons, and Refractory Compounds at part-per-trillion (pptV) levels. SAES Pure Gas offers turn key customization and sub-assemblies solutions certified for purity at pptV levels. Contact: Steve Wallace, Sales, steve\_wallace@saes-group.com

## Sagem #231

ave de la Tour Maury, St Pierre du Perray, 91280 France  
+33 1 69 89 72 00; fax +33 1 69 89 76 50  
reosc@sagem.com

### Featured Product: High-performance, spherical, aspherical, on- or off-axis high-performance optic units or components

SAGEM, REOSC program, which aims to study and create high-performance optic components and systems for astronomy, space applications, large-scale lasers and the semi conductor industry. Each project pushes the envelope, and our engineers' and technicians' thirst for innovation is quenched each time. With our reasonably-sized teams, we always realize the core of our clients' systems. In this spirit, we are already working on the project for the world's largest telescope (42m in diameter).



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+1 480 893 8898; fax +1 480 893 8637  
info@microsi.com; www.microsi.com

Shin-Etsu, the world's No. 1 supplier of semiconductor silicon wafers and a leading supplier of essential electronic materials. Shin-Etsu's product portfolio includes, photomask blanks, EB resists, pellicles, synthetic quartz, semiconductor advanced resists along with numerous specialized thermal interface materials. Contact: Ed Nichols, Marketing Manager, enichols@microsi.com; info@microsi.com

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## Solid State Technology / Laser Focus World

#117

98 Spit Brook Rd, PennWell Corp, Nashua, NH, 03062 United States  
+1 603 891 9410  
justineb@pennwell.com; www.solid-state.com

## Storex Technologies

#137

Calea Mosilor nr. 274 ap. 34, sector 2, Bucharest, 020892 Romania  
+40 722690644; fax +40 21 2118478  
eugenp@rdslink.ro; www.storextechnologies.com

**Featured Product: Quantum Optical Lithography with sub-10 nm half-pitch resolution.**

Contact: Eugen Pavel, CEO, eugenp@rdslink.ro

## Sumika Electronic Materials

#222

3832 E Watkins St, Phoenix, AZ, 85034 United States  
+1 602 659 2590; fax +1 602 438 2277  
customerservice@sumikamaterials.com;  
www.sumikamaterials.com

**Featured Product: Photoresists (i-line, KrF, ArF), EBR solvents, post CMP cleaners, Targets, and GaAs EPI wafers**

Sumika Electronic Materials, Inc., a subsidiary of Sumitomo Chemical, is a leading supplier to the semiconductor, PV, thin film and MEMs industries. Products include photoresists (i-line, KrF, ArF, Immersion, Double Patterning, EUV, and E-Beam), EBR solvents, post CMP cleaners, and Targets. In addition, Sumika manufactures GaAs EPI wafers for the global Semiconductor market and supplies engineered resins to the electronics and automotive industries. Contact: Joe Dagget, Sales and Marketing Manager, jdagget@sumikamaterials.com; Customer Service, customerservice@sumikamaterials.com

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wegwyzer@tno.nl; www.tno.nl

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user@tokamerica.com; www.tokamerica.com

## TRIOPTICS GmbH #116

**SPIE** Corporate Member

Hafenstrasse 35-39, Wedel, 22880 Germany  
+49 4103 18006 0; fax +49 4103 180062 0  
info@trioptics.com; www.trioptics.com

**Featured Product: OptiCentric® Max 300 UP- The Ultimate Solution for Alignment and Assembly of High Precision Optics**

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OptiSpheric® integrated optical testing  
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PrismMaster® accurate automatic goniometer featuring ultra-accurate angle measurements SpectroMaster® measurement of refractive index from UV to IR  
µPhase® Interferometer measures the quality of spherical, aspherical & flat optic

## Vistec Electron Beam GmbH #206

Göschwitzer Str 25, Jena, 07745 Germany  
+49 3641 65 1900; fax +49 3641 65 1922  
electron-beam@vistec-semi.com; www.vistec-semi.com

**Featured Product: Variable Shaped Beam Lithography Equipment**

Vistec Electron Beam is providing leading technology solutions for advanced electron-beam lithography. Based on the VSB principle, the 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. In addition to their production facility, Vistec maintains service and support centers in Europe, China and Taiwan. Contact: Ines Stolberg, Marketing Manager, ines.stolberg@vistec-semi.com

## Vistec Lithography, Inc. #328

125 Monroe Street, Watervliet, NY, 12189-4015 United States  
+1 518 874 3000; fax +1 518 874 3198  
info@vistec-litho.com; www.vistec-litho.com

**Featured Product: The Vistec EBPG5200, the elite Gaussian electron beam nanolithography system.**

Vistec Lithography has supplied, for over thirty years, the finest research and production laboratories worldwide with reliable electron beam nanolithography systems. Featuring easy to use software and the finest electron optics on the market, Vistec systems are available in 150mm and 200mm formats featuring true full wafer exposure. Coupled with a forty wafer capacity and unmatched accuracy, the Vistec EBPG can supply the <10nm exposures required in today's lithography environment. Contact: Kevin Baughman, North America Sales manager, kevin.baughman@vistec-litho.com; Rainer Schmid, General Manager, Rainer.Schmid@vistec-litho.com

## XEI Scientific, Inc. #121

**SPIE** Corporate Member

1755 East Bayshore Rd Ste 17, Redwood City, CA, 94063 United States  
+1 650 369 0133; fax +1 650 363 1659  
info@evactron.com; www.evactron.com

## XYALIS #205

**SPIE** Corporate Member

World Trade Center Grenoble - BP1510, Grenoble Cedex01, 38025 France  
+33 4 76 70 64 75; fax +33 4 76 28 28 49  
info@xyalis.com; www.xyalis.com

## Zygo Corporation #122

**SPIE** Corporate Member

Laurel Brook Road, Middlefield, CT, 06455-1291 United States  
+1 860 347 8506  
inquire@zygo.com; www.zygo.com

**Featured Product: Precision Measurement Products and Optical Fabrication**

Since 1970 the world's leading manufacturers have relied on Zygo products for critical production testing, quality control, research & development. Unmatched commitment to superior quality has established Zygo as the industry leader for precision measurement products, optical system design and assembly, and high-precision optical fabrication. Zygo delivers advanced optical metrology tools for precise, noncontact measurement of surface and material characteristics of flats, spheres, aspheres. Contact: George Neale, Director of Sales & Support, inquire@zygo.com

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Energetiq Technology, Inc.  
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JSR Micro, Inc.  
Molecular Imprints, Inc.  
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Storex Technologies  
Vistec Lithography, Inc.

## Machine Vision, Factory Automation

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Owens Design

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Benchmark Technologies  
Brewer Science Inc.  
FUJIFILM Electronic Materials  
Molecular Imprints, Inc.  
Vistec Lithography, Inc.

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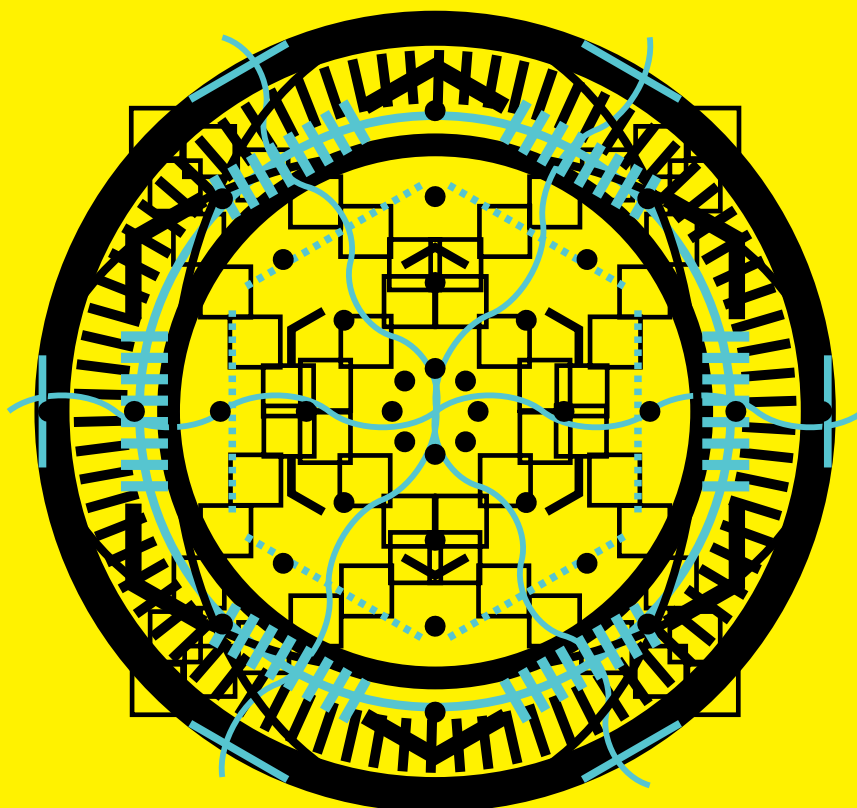
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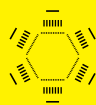
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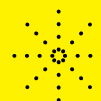
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# 2013 Photomask Technology

Mask design, production, integration,  
and next-generation mask technologies

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## Call for Papers

Submit your abstract by 25 February 2013  
[www.spie.org/pm2013](http://www.spie.org/pm2013)

### Conferences & Courses

10–12 September 2013

### Exhibition

10–11 September 2013

### Location

Location: Monterey Conference Center,  
Monterey, California, USA

### Technologies

- Mask Making
- Emerging Mask Technologies
- Mask Application
- Mask Business



The international technical group of  
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