

# SPIE. ADVANCED LITHOGRAPHY

# 2020

Advanced Lithography

# EXHIBITION GUIDE

Moving technology to market™

#### Exhibition

25-26 February 2020

#### Conferences + Courses

23-27 February 2020

San Jose Convention Center  
San Jose, California, USA

[spie.org/al](https://www.spie.org/al)

#SPIELitho



# ADVANCED LITHOGRAPHY 2020

TECHNOLOGIES FOR LITHOGRAPHY R&D, DEVICES,  
TOOLS, FABRICATION, AND SERVICES

Exhibition: 25-26 February 2020

Conferences and Courses: 23-27 February 2020

San Jose, California, USA

## Welcome to San Jose

CUTTING-EDGE RESEARCH

WORLD-CLASS SPEAKERS

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FOCUSED TECHNICAL TOPICS

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# WELCOME TO THE EXHIBITION

## **SPIE.** **ADVANCED LITHOGRAPHY**

Tuesday 25 February · 10:00 AM - 5:00 PM  
 Wednesday 26 February · 10:00 AM - 4:00 PM

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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.**

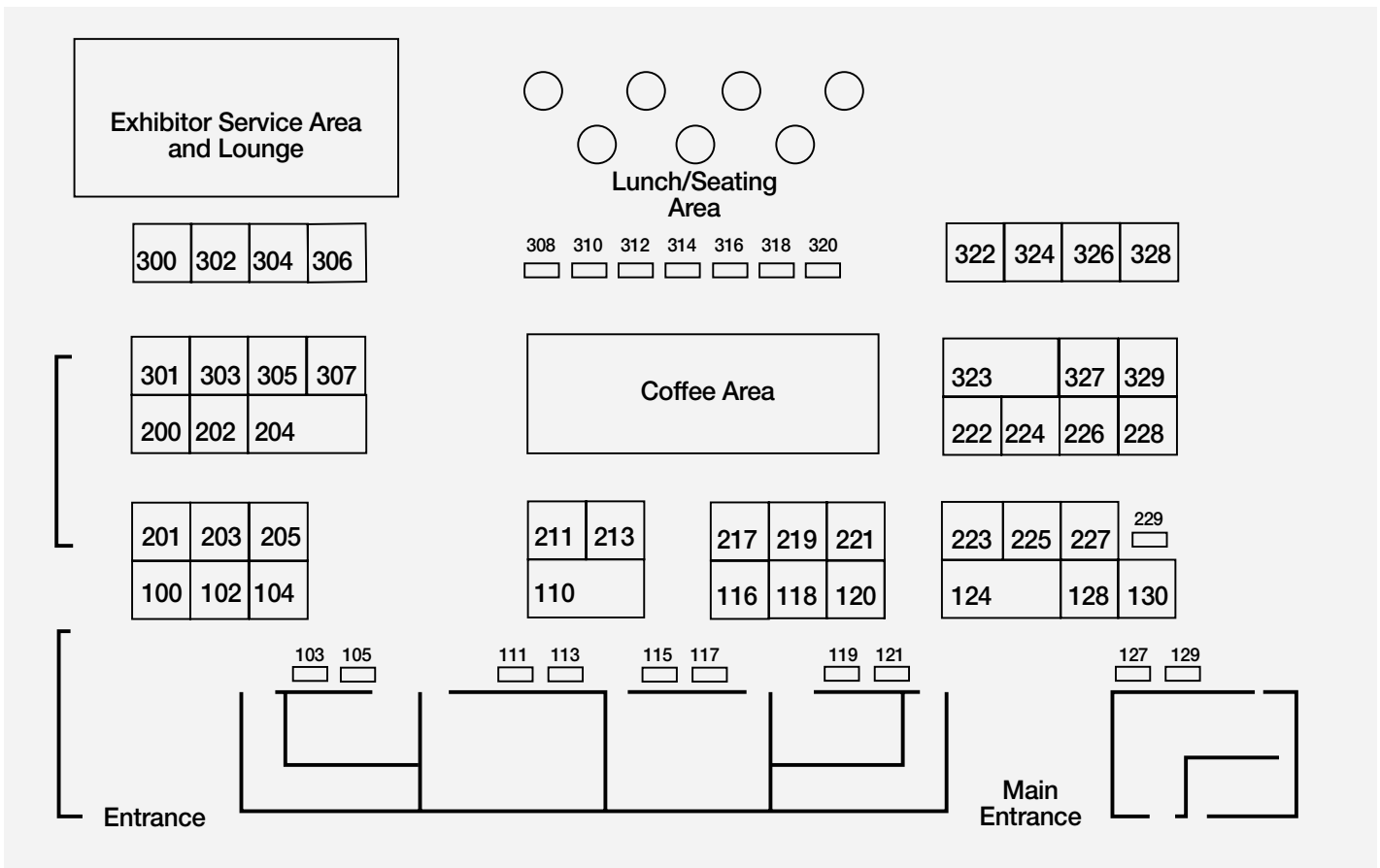


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# SAN JOSE CONVENTION CENTER - EXHIBITION FLOOR



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# GENERAL INFORMATION

## Exhibition Hours

Tuesday 25 February · 10:00 AM - 5:00 PM

Wednesday 26 February · 10:00 AM - 4:00 PM

## Onsite Registration and Badge Pickup Hours

Convention Center

Sunday 23 February · 7:15 AM - 5:00 PM

Monday 24 February · 7:15 AM - 4:00 PM

Tuesday 25 February · 7:30 AM - 5:00 PM

Wednesday 26 February · 7:30 AM - 4:00 PM

Thursday 27 February · 7:45 AM - 4:00 PM

(Thursday is conference registration only)

## Complimentary Breakfast Breads

Hall 2 Concourse

Monday - Thursday · 7:30 AM - 8:30 AM

Breakfast breads will be served Monday-Thursday.

Sponsored by **ASML**

## Complimentary Coffee Service

Sunday

7:30 AM - 8:30 AM, Executive Ballroom Concourse, front of windows

10:00 AM - 10:30 AM, Executive Ballroom Concourse, front of windows

3:00 PM - 3:30 PM, Executive Ballroom Concourse, front of windows

Monday

7:30 AM - 4:00 PM, Hall 2 Concourse

Tuesday

7:30 AM - 9:30 AM, Hall 2 Concourse

10:00 AM - 5:00 PM, Exhibition Hall 1

Wednesday

7:30 AM - 9:30 AM, Hall 2 Concourse

10:00 AM - 4:00 PM, Exhibition Hall 1

Thursday

7:30 AM - 4:00 PM, Hall 2 Concourse

Please check the conference schedule for specific break times.

Sponsored by  **ASML**  **Heracelus**  
**FUJIFILM**

## SPIE Hosted Lunches

Convention Center Exhibition Hall

Tuesday - Wednesday · 11:30 AM - 1:00 PM

Check individual conference listings for exact times. Lunches are included with full conference registrations.

Sponsored by 

## Food and Refreshments for Purchase

There are a variety of food and drink options, including hot and cold snacks, beverages, hot entrees, deli sandwiches, salads, and pastries available for purchase. Cash and credit cards accepted.

Ballroom Concourse

Monday - Thursday · 7:30 AM - 4:00 PM

Exhibition Hall Concession Stand

Tuesday - Wednesday · 11:00 AM - 2:00 PM

## Wireless Internet Access

Convention Center, Upper Level Concourse

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

West end WiFi sponsored by



East end and Exhibition Hall WiFi sponsored by



## Phone Charging Station

Convention Center Concourse, Open during registration hours

Sponsored by



## SPIE Conferences and Exhibitions App

Search and browse the program, special events, participants, exhibitors, courses, and more. Build your personalized schedule and sync with the online MySchedule tool. The free SPIE Conferences and Exhibitions App is available for iPhone and Android phones. Information about restaurants and food options is also available on the app.

Sponsored by



## SPIE Bookstore

Convention Center Lobby, near Registration

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

## SPIE Education Services

Course Materials Pick-up, located near Registration, open during registration hours

Sunday-Thursday: Bookstore

If you have registered to attend a course, please stop by the Bookstore after you pick up your badge. Turn in your course ticket to get your course materials and the location of your course. Browse course offerings or learn more about SPIE courses available in portable formats such as online and customized, in-company courses.

# COURSES



SPIE Courses are focused, efficient training from the most experienced and accomplished minds in industry and research.

Gain knowledge from the experts and apply it directly to your daily work.



- Learn from the best. This is your opportunity for direct instruction from legends in the semi/litho industry, many of whom are pioneers in their fields
- Course topics are aligned with current industry needs and trends
- Earn CEUs for professional continuing education requirements

[spie.org/education](http://spie.org/education)

Information for Course attendees:  
[spie.org/education/course-attendees](http://spie.org/education/course-attendees)

## 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 is accredited by the International Association for Continuing Education and Training (IACET) and is authorized to issue the IACET CEU.

SUNDAY 23 FEBRUARY 2020	
SC101	<b>Introduction to Microlithography: Theory, Materials, and Processing</b> (Bowden, Dammel) 8:30 AM - 5:30 PM, \$685 / \$397 / \$805
SC111	<b>Lithography Process Control</b> (Levinson) 8:30 AM - 5:30 PM, \$730 / \$415 / \$850
SC885	<b>Principles and Practical Implementation of Multiple Patterning</b> (Dusa, Hsu) 8:30 AM - 5:30 PM, \$685 / \$397 / \$805
SC888	<b>EUV Lithography</b> (Bakshi, Ahn, Naulleau) 8:30 AM - 5:30 PM, \$920 / \$491 / \$1,040
SC992	<b>Lithography Integration for Semiconductor FEOL &amp; BEOL Fabrication</b> (Lin, Zhang) 8:30 AM - 5:30 PM, \$685 / \$397 / \$805
SC1099	<b>Chemistry and Lithography</b> (Okoroanyanwu) 8:30 AM - 5:30 PM, \$785 / \$437 / \$905
SC1100	<b>Scatterometry in Profile, Overlay and Focus Process Control</b> (Cramer, Turovets) 1:30 PM to 5:30 PM, \$420 / \$269 / \$485
SC1132	<b>Computational Basis for Advanced Lithography Techniques</b> (Lai) 8:30 AM - 12:30 PM, \$420 / \$269 / \$485
SC1133	<b>Advanced concepts in Metrology Toolset Stability and Matching</b> (Adan) 1:30 PM - 5:30 PM, \$420 / \$269 / \$485
SC1158	<b>Metrology of Image Placement</b> (Starikov) 1:30 PM to 5:30 PM, \$425 / \$271 / \$490
SC1263	<b>Stochastic Lithography</b> (Mack, Petersen) 8:30 AM - 5:30 PM, \$685 / \$397 / \$805
SC1264	<b>Machine Learning for Lithography</b> (Shiely) 8:30 AM - 5:30 PM, \$730 / \$415 / \$850
MONDAY 24 FEBRUARY 2020	
SC1030	<b>Interaction of Physical Design and Lithography</b> (Yuan) 1:30 PM to 5:30 PM, \$420 / \$269 / \$485
THURSDAY 27 FEBRUARY 2020	
SC616	<b>Practical Photoresist Processing</b> (Dammel) 8:30 AM - 12:30 PM, \$420 / \$269 / \$485

Prices: Members / Student Member / Non-Members

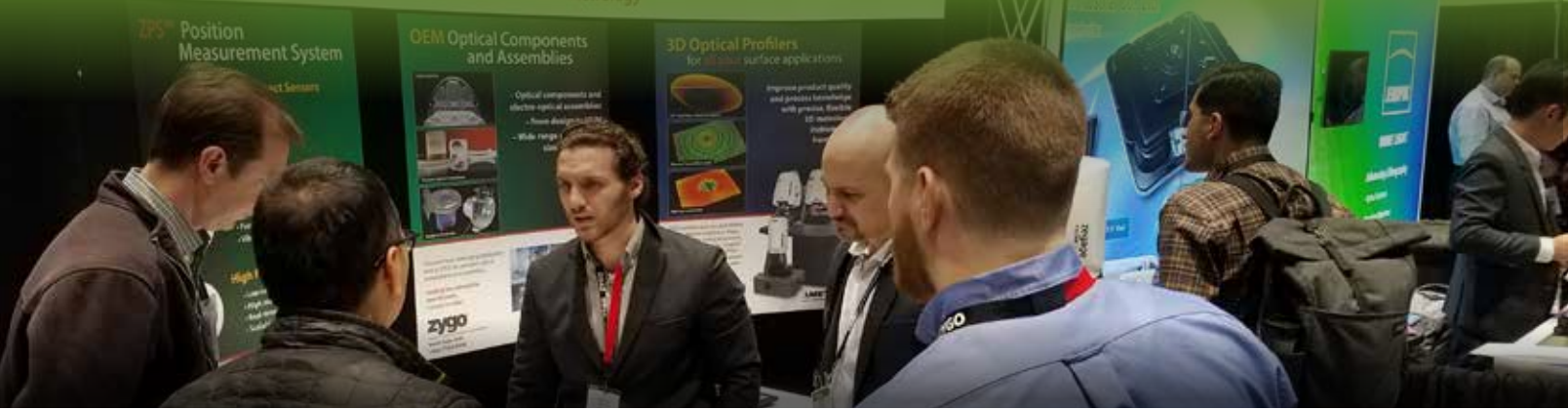
Review course descriptions onsite.

**SEE SPIE CASHIER TO REGISTER**

**SPIE Student Members receive significant discounts on courses.**



# EXHIBITOR DIRECTORY



## SPIE ADVANCED LITHOGRAPHY EXHIBITION

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.

### Amuneal Manufacturing Corp #202

Technical Products, 4737 Darrah Steet, Philadelphia, PA, 19124-2705 United States

+1 215 535 3000 243; fax +1 215 743 1715  
tylera@amuneal.com; www.amuneal.com

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: Tyler Anderson, Manufacturing Engineer, tylera@amuneal.com

### attocube systems Inc. #306

**SPIE** Corporate Member

2020 Stuart St, Berkeley, CA, 94703 United States  
+1 510 649 9245

info@attocube.com; www.attocube.com

attocube is the technology leader for ultra precise motion and sensing solutions compatible with extreme environmental conditions such as UHV, magnetic field, radiation exposure, as well as cryogenic to elevated operating temperatures. The portfolio also includes integrated measurement systems, such as the attoDRY800 cryo-optical table and a Photonic Probe Station, an ultra-stable, extremely compact and easy to use table top setup for nanophotonic device characterization.

### Benchmark Technologies #217

Bldg E, 7E Kimball Ln, Lynnfield, MA, 01940-2654 United States  
+1 203 213 3002; fax +1 781 246 0308

contact@benchmarktech.com; www.benchmarktech.com

Benchmark is a leading supplier of test and setup reticles for lithography systems. The company also offers overlay software for in-fab monitoring and analysis, general design and layout services, grayscale mask design, mask making services, imprint stamps and other custom fabrication services. Contact: Andrew Zanzal, VP Sales, azanzal@benchmarktech.com; Patrick Reynolds, President, preynolds@benchmarktech.com

### C&D Semiconductor Services, Inc. #115

2031 Concourse Dr, San Jose, CA, 95131 United States  
+1 408 383 1888; fax +1 408 383 1889

www.cdsemi.com/sales-offices-cdsemi.html

#### Featured Product: The P9000 Cluster System

C&D Semiconductor, Inc. is an innovative, fast-growing semiconductor equipment manufacturer based in San Jose, California. Founded in 1989, we have been serving the global semiconductor and other related industries for more than two decades, with customers from all over the world. Contact: Rick Acaba, National Sales Manager, racaba@cdsemi.com; Charlie Nguyen, General Manager, cnguyen@cdsemi.com

### Cadence Design Systems, Inc. #104

2655 Seely Ave, San Jose, CA, 95134-1931 United States  
+1 408 943 1234; fax +1 408 428 5001

events@cadence.com; www.cadence.com

#### Featured Product: DFM and Computational Lithography Solutions

Cadence's computational DFM solutions include optical proximity correction, layout optimization, design analysis, and chemical and mechanical polishing modeling for improved design manufacturability and reduced time to yield. They are part of Cadence's Intelligent System Design strategy which helps customers develop differentiated products in markets such as, consumer, cloud, data center, automotive, and industrial. To learn more, contact Philippe Hurat. Contact: Philippe Hurat, Product Manager, Director, phurat@cadence.com



## SPONSOR

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

#102

**SPIE** Corporate Member

Industrial Products Div - Optoelectronic,  
3300 N First St, San Jose, CA, 95134-1900  
United States

+1 408 468 2001

semi-info@cusa.canon.com; www.usa.canon.com/industrial



#### Featured Product: Semiconductor Manufacturing Equipment - Lithography

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: Starley Douglas Shelton, Marketing Manager; Neel Chopra, Product Marketing

## SPONSOR

### Carl Zeiss SMT GmbH

#120

Carl Zeiss Promenade 10, Jena, 07745 Germany  
+49 3641 64 2563; fax +49 3641 64 2938  
info.sms@zeiss.com; www.zeiss.com/mask-solutions



#### Featured Product: ZEISS MeRiT neXT, ZEISS AIMS 1x-193i, ForTune, AAA EUV, SAA,

ZEISS Semiconductor Mask Solutions (SMS) specializes in a key process in semiconductor manufacturing: the photomask. Core expertise in light and electron optics, complemented by a pioneering femto-second laser technology form the foundation of a product portfolio comprising in-die metrology, actinic qualification, repair, and tuning of photomasks. To increase automation and enhance tool capabilities, SMS also offers advanced software solutions. Contact: James Polcyn, Sales Director, Jim.Polcyn@zeiss.com; Leila Hammad, Marketing Manager, leila.hammad@zeiss.com

### CEROBEAR GmbH

#226

Kaiserstr. 100, Herzogenrath, 52134 Germany  
+49 2407 95560; fax +49 2407 96224  
cb-sales@cerobear.com; www.cerobear.com

#### Featured Product: All types of hybrid & all-ceramic ball and roller bearings, thin section bearings, slewing rings.

CEROBEAR GmbH is a manufacturer of custom engineered hybrid and all-ceramic rolling bearings for industries such as Semiconductor, Aerospace, Automation, Formula 1, Turbo Machinery, etc. CEROBEAR bearings maximize system reliability, lifetime and performance thus significantly reduce the total operating costs. CEROBEAR bearings perform trouble-free - even under extreme operating conditions including vacuum, clean room, extreme temperature, media or no lubrication, corrosive environment. Contact: Christian Klatt, Business Development Manager, Christian.klatt@cerobear.com

### Cosmotec, Inc.

#128

229 Polaris Ave Ste 3, Mountain View, CA, 94043-4579 United States

+1 408 428 9741; fax +1 408 428 9742

ask@cosmotec.us; www.cosmotec.us

#### Featured Product: The highest quality ceramic-to-metal UHV feedthroughs

We, at Cosmotec, design the highest quality feedthroughs available on the market today. Our ceramic-to-metal feedthroughs are 100% He leak tested for UHV applications. Rest assured that our feedthroughs are resistant to: ultra clean, high voltage, destructive chemicals, cryogenic, and excessive temperatures. Our exceptional feedthroughs are ideal for these severe conditions as well as for applications that require both hermiticity (vacuum tightness) and electrical insulation. Contact: Taku Sekiguchi, Head of engineering, sekiguchi@cosmotec.us

### Coventor, Inc.

#323

**SPIE** Corporate Member

9121 Anson Way Ste. 200, Raleigh, NC, 27513 United States  
+1 617 648 8388

sales@coventor.com; www.coventor.com

#### Featured Product: SEMulator3D, a platform for modeling semiconductor and MEMS fabrication processes

Coventor®, a Lam Research company, is a market leader in automated solutions for developing semiconductor process technology, as well as micro-electromechanical systems (MEMS). Coventor serves a worldwide customer base with offices in North America, Europe and Asia. Its SEMulator3D modeling and analysis platform provides fast and accurate 'virtual fabrication' of advanced semiconductor manufacturing processes, allowing engineers to understand manufacturing effects early in the development cycle. Contact: Dave Cook, sales@coventor.com

### CyberOptics Corp.

#308

**SPIE** Corporate Member

5900 Golden Hills Dr, Minneapolis, MN, 55416 United States  
+1 763 542 5000; fax +1 763 542 5100

info@cyberoptics.com; www.cyberoptics.com

#### Featured Product: Auto Vibration and Leveling Sensor with CyberSpectrum

CyberOptics Corporation is a leading global developer and manufacturer of high-precision 3D sensing technology solutions. CyberOptics' sensors are used for inspection and metrology in the SMT and semiconductor capital equipment markets to significantly improve yields and productivity. Headquartered in Minneapolis, Minnesota, CyberOptics conducts worldwide operations through its facilities in North America, Asia and Europe. Contact: Allyn Jackson, Sales Manager & Sr. FAE, ajackson@cyberoptics.com




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[optics.org/newsletter](https://optics.org/newsletter)

**Get the latest industry news.**



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## Energetiq Technology, Inc. #312

**SPIE** Corporate Member

205 Lowell Street, Wilmington, MA, 01887-2972 United States  
+1 781 939 0763; fax +1 781 939 0769  
marketing@energetiq.com; www.energetiq.com

### Featured Product: EQ-10 Electrodeless Z-Pinch™ Source

Energetiq Technology is the world's leading developer and manufacturer of ultra-bright light sources. Energetiq's EUV Sources are compact, easy-to-use, reliable, and cost-effective. The EQ-10 Series is uniquely suited for metrology and research applications. Contact: Toru Fujinami, Sr. Director of Business Development, tfujinami@energetiq.com; Sam Gunnell, Product Manager, sgunnell@energetiq.com

## Entegris, Inc. #203

129 Concord Rd, Billerica, MA, 01821-4600 United States  
+1 978 436 6500; fax +1 978 436 6735  
sales@entegris.com; www.entegris.com/content/en/home/about-us/locations.html

Entegris provides critical products and materials used in advanced high-technology manufacturing. These products and materials are used to make the building blocks of many of the world's most complex microelectronic products, such as computers, mobile devices and phones, data storage components, televisions and monitors, and automobiles. With a broad product offering, advanced manufacturing capabilities, worldwide infrastructure and unmatched technical expertise, our passion is your advantage.

## GenlSys Inc. #322

**SPIE** Corporate Member

PO Box 410956, San Francisco, CA, 94141-0956 United States  
+1 408 353 3951  
info@genisys-gmbh.com; www.genisys-gmbh.de

### Featured Product: MASKER - Mask Production Software for Data Preparation & Process Correction

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; Ulrich Hofmann, General Manager, hofmann@genisys-gmbh.com

## Gudeng Precision Industrial Co., Ltd. #225

SALES DEPT., 9F No 2 Sec 4 Jhongyang Rd, Tucheng City Taipei, 23678 Taiwan  
+886 2 2268 9141; fax +886 2 2269 1943  
sales@gudeng.com; www.gudeng.com

### Featured Product: Extreme Ultraviolet Lithography (EUV) reticle carrier

Gudeng Precision Industrial Co., LTD is principally engaged in the production and sale of integrated solutions for protection, transfer and storage of photo masks and molds. The Company primarily operates two business segments. Gudeng Precision has contributed to developing innovative technology and has been a technological leader of Extreme Ultraviolet Lithography (EUV) mask handling. Gudeng Equipment is our subsidiary focusing on purging stations and mask cleaners. Contact: Ellen Wu, Product Assistant Manager, ellen.wu@gudeng.com; Weiching Lin, Senior sales, sales@gudeng.com

## Heidelberg Instruments Inc. #307

**SPIE** Corporate Member

2539 W 237th St Ste A, Torrance, CA, 90505 United States  
+1 310 212 5071; fax +1 310 212 5254  
info@himt.us; www.himt.us

With an installation base of well over 900 systems in more than 50 countries, Heidelberg Instruments is a world leader in production of high-precision maskless lithography systems. Due to their flexibility, these systems are used in research, development and industrial applications for direct writing and photomask production by some of the most prestigious universities and industry leaders in the areas of MEMS, nanotechnology, ASICs, TFT, displays, micro-optics, and other related applications. Contact: Niels Wijnaendts van Resandt, Director of Sales North & South America, info@himt.us

## HORIBA Instruments Inc. #105

430 Indio Way, Sunnyvale, CA, 94085-4202 United States  
+1 512 539 4806  
www.horibastec.com

## ibss Group, Inc. #129

**SPIE** Corporate Member

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

### Featured Product: Chiaro - Plasma clean & hydrophilize surfaces, Mount & View TEM specimens, leak check liquid cells

ibss develops and produces products used successfully in EM and Synchrotron labs around the world. The GV10x Downstream Asher reduces carbon and hydrocarbon contamination 10 to 20x more effectively than traditional methods at vacuum pressure safe for TMP operation. The Mobile Cubic Asher and Chiaro for specimen & in-situ EM cleaning, employ ibss signature GV10x Qwk-Switch source operated via touchscreen panel, fitted into one convenient enclosure. FIB/SEM/TEM/SIMS/XPS/Review SEM Contact: Vincent Carlino, President, admin@ibssgroup.com

## INKO Industrial Corp. #310

695 Vaqueros Ave, Sunnyvale, CA, 94085-3524 United States  
+1 408 830 1040; fax +1 408 830 1058  
sales@pellicle-inko.com; www.pellicle-inko.com

### Featured Product: pellicle, KrF pellicle, ArF 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: Feng Ye, QA manager, ye@pellicle-inko.com; Joe Mac, Customer service manager, joemac@pellicle-inko.com



# EXHIBITOR DIRECTORY

## J.A. Woollam

#211

**SPIE.** Corporate Member

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

For all your ellipsometry needs, from measuring your thin film sample to the installation and training of your very own ellipsometer, the J.A. Woollam Company is here for you every step of the way. Stop by our booth #211 for more information or contact us today about the variety of spectroscopic ellipsometers we provide to help you characterize your thin films. You can also email us today at sales@jawoollam.com or visit us on the web at www.jawoollam.com Contact: Ron Synowicki, Applications Engineer, rsynowicki@jawoollam.com

## JENOPTIK Light & Optics

#222

**SPIE.** Corporate Member

16490 Innovation Dr, Jupiter, FL, 33478-6428 United States  
+1 561 881 7400; fax +1 561 881 1947  
sales@jenoptik-inc.com; www.jenoptik.com

JENOPTIK Optical Systems delivers a unique range of custom optical solutions incorporating precision assemblies and wafer scale microoptics for DUV through infrared applications. In-house expertise in system design, modeling, test and fabrication of optics and microoptics enables Jenoptik to deliver cutting-edge solutions for your inspection and metrology OEM applications. We combine design and engineering with high volume manufacturing to deliver from facilities in the US, Germany and Asia. Contact: Mark Bigelow, mark.bigelow@jenoptik-inc.com

## JEOL USA Inc.

#130

**SPIE.** Corporate Member

11 Dearborn Rd, Peabody, MA, 01960-3823 United States  
+1 978 535 5900; fax +1 978 536 2205  
salesinfo@jeol.com; www.jeolusa.com

JEOL is the world's top supplier of EBL systems since it's first Lithography system produced in 1967. Our applications range from mask/reticle production for high-end devices and nano-lithography research to ultrafine, direct write exposures for communication devices. JEOL continuously pursues higher writing accuracy, and throughput, with easier operation. We offer unsurpassed technical reliability and service expertise. Contact: Zane Marek, EBL Product Mgr, marek@jeol.com

## JSR Micro, Inc.

#124

**SPIE.** Corporate Member

1280 N Mathilda Ave, Sunnyvale, CA, 94089-1213 United States  
+1 408 543 8800; fax +1 408 543 8996; www.jsrmicro.com

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

JSR Micro, Inc. is an innovation partner to its customers manufacturing the industry's most innovative family of photoresists, developers, and specialty chemicals. JSR is also a leader in Advanced Cleans Technology and materials for packaging. Our unique THB series of negative tone resists and WPR series of dielectric materials are ideal for next generation packaging technologies that facilitate higher performance. Contact: Joe Ritter, Sales Director, jritter@jsrmicro.com

**SPIE.** Education

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COURSES**



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[spie.org/courses](http://spie.org/courses)



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**SPIE.**

## Kayaku Advanced Materials, Inc. #224

200 Flanders Road, Westborough, MA, 01581-1040 United States  
+1 617 965 5511  
sale@kayakuAM.com; www.kayakuAM.com

### Featured Product: PMGI Bi Layer Resists

Kayaku Advanced Materials, Inc., previously MicroChem, focuses on providing innovative chemicals solutions to the MEMS, microelectronic, and semiconductor markets. Along with our exclusive distribution partnership with DuPont electronic materials, Kayaku Advanced Materials specializes in photoimaging epoxy, eBeam and PMGI Bi-layer resists and a suite of ancillary lithography materials. Kayaku Advanced Materials is a wholly owned subsidiary of Nippon Kayaku Co. Ltd., Tokyo, Japan  
Contact: Bob Andrews, Sales Director, Bandrews@kayakuAM.com; Rob Hardman, Sr Sales, rhardman@kayaku.com

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## SPONSOR

## Mentor, a Siemens Business #300

8005 SW Boeckman Rd, Wilsonville, OR, 97070-9733 United States  
+1 503 685 7000; fax +1 503 685 7704  
calibre@mentor.com; www.mentor.com



### Featured Product: Calibre

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, A Siemens Business 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: Steffen Schulze, VP Product Management, steffen\_schulze@mentor.com; Gandharv Bhatara, Product Marketing Manager, gandharv\_bhatara@mentor.com

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## Micro Lithography, Inc. #219

1257 Elko Dr, Sunnyvale, CA, 94089-2211 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; Corbin Imai, Sales Representative, corbin@zysancorp.com

## Microlight #117

5 ave du Grand Sablon, La Tronche, 38700 France  
+33 476 549 516  
contact@microlight.fr; www.microlight3d.fr

## Mitsui Chemicals America, Inc. #127

61 Metro Dr, San Jose, CA, 95110 United States  
+1 408 487 2891; fax +1 408 453 0684  
m.bautista@mitsuichem.com; www.mitsuichemicals.com

## Nextin Inc. #229

23-12 Dongtansandan 9-gil, Dongtan-myeon, Hwaseong-si, Kyonggi, 18487 Korea, Republic of  
+82 31 629 2300 ; fax +82 31 629 2399  
sales@nextinsol.com; www.nextinsol.com

## NTT Advanced Technology Corp. #119

1950 University Ave Ste 600, East Palo Alto, CA, 94303-2250 United States  
+1 408 392 4280; fax +1 408 573 7721  
bizdevelop@ntt-at.com; www.ntt-at.com

### Featured Product: Multilayer mirrors, Nano-scale test patterns, Polarizer, Transmission grating, Fresnel zone plate

NTT-AT provide custom design optical components such as Multilayer mirrors, Nano-scale test patterns, Polarizer, Transmission grating, Fresnel zone plate for R&D and industrial fields. These components are fabricated as solutions for EUV Lithography fields: light source, metrology, mask and photo-resist. NTT-AT's optics are corresponding to LPPs, SRs/XFELs, HHGs and soft x-ray lasers as well. Contact: Mayumi Yamashita, Sales and Business Development, m.yamashita@ntt-at.com

## Osiris International GmbH #227

Gewerbestr. 13, Moos, 78345 Germany  
+49 7732 15 698 20  
info@osiris-nano.com; www.osiris-nano.com

Osiris International is a manufacturer of machines specializing in photolithographic process equipment used in semiconductor and microsystems (MEMS) technology. The main application areas for surface treatment of wafers, substrates or masks are the following processing applications. Photoresist spin & spray coating, developing, baking, wet cleaning, post CMP cleaning, etching, stripping & lift-off and temporary bonding & debonding.

## Pall Corp. #223

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

Pall offers a complete line of filtration, purification and separation technologies for all lithography processes. These include asymmetric Nylon 6,6, High density polyethylene and PTFE media. Pall has demonstrated that our innovative filter technologies can significantly reduce defectivity, decrease filter start up time and improve overall cost of ownership. Find out how Pall can help you improve your lithography process. Contact: Glenn Dado, Sr Marketing Manger, Glenn\_Dado@pall.com

## Philips Innovation Services #318

High Tech Campus 34, Eindhoven, 5656 AE Netherlands  
innovationservices@philips.com;  
www.innovationservices.philips.com

### Featured Product: Philips Innovation Services creates the bridge from idea to market.

Making innovation work, is our drive as well as our deliverable. That is what we have been doing in the last 50 years. Not only within Philips but also for external customers in the Semiconductor market. Helping leading equipment suppliers to keep pace with Moore's Law through our expertise. Driven by our deep technical creativity, we continue where others stop. Are you looking for new solutions? Let's talk! Contact: Arie Leunis, arie.leunis@philips.com

# EXHIBITOR DIRECTORY

## PM B.V.

#228

Galleistraat 2, Dedemsvaart, 7701 SK Netherlands  
+31 523 61 22 58 ; fax +31 523 61 52 90  
info@pmbearings.nl; www.pmbearings.nl

**Featured Product: XY2Z-Theta motion system, precision linear bearings, linear slides, totary stages.**

PM has engineered and manufactured innovative and top quality precision linear bearings, slides and engineered-to-spec motion systems. We are experts in finding solutions that meet the specific requirements of a wide variety of industry applications. A trusted partner for hundreds of industry heavyweights around the globe, our client base ranges from the semiconductor industry, medical technology and metrology sectors, to industrial automation, space and de defense industry. Contact: Bert Post, Sales manager, bert.post@pm.nl; Ard Abbink, Sales manager, ard.abbink@pm.nl

## POLLEN Metrology

#324

122 rue Rocher du Lorzier, Moirans, 38430 France  
+33 476657121

johann@pollen-metrology.com; www.pollen-metrology.com

**Featured Product: Platypus Smart software to accelerate the development of etch, litho and deposition processes**

Pollen Metrology is a deeptech company specialized in data analysis software powered by a unique AI and data fusion technology oriented to the process control of high-performance materials. Our primary market is Semiconductor industry where Pollen offers its Platypus Smart products portfolio to analyze automatically complex images coming from CD-SEM, TEM and cross-section SEM to accelerate process development in etch, lithography, deposition (...). Contact: Johann Foucher, CEO, johann@pollen-metrology.com; Ron Burns, VP Sales, ron.burns@pollen-metrology.com

## Pozzetta, Inc.

#213

3121 S Platte River Dr, Englewood, CO, 80110-2139 United States  
+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, PFA Fittings**

We help our customers reduce costs with customized in-process solutions such as reticle boxes, wafer carriers, PFA fittings, and critical device shipping solutions. We help optimize fab space by personally reviewing the storage and processing of critical devices and delivering complete solutions that include tracking tags, reticle pods and custom cleanroom storage solutions. We also help manage cleaning and maintenance programs for cassettes, pods and wet process stations. Contact: Artemis Vasiliades, Account Executive, artemis@pozzetta.com; Scott Reese, Account Executive, scott.reese@pozzetta.com

## SPONSOR

### Qoniac GmbH

#100

**SPiE** Corporate Member

Dr.-Kuelz-Ring 15, Dresden, 01067 Germany  
+49 351 4189 3340; fax +49 351 4189 3341  
info@qoniac.com; www.qoniac.com



**Featured Product: OVALiS Software Suite**

Qoniac is the premier supplier of on-product process optimization and control solutions for leading-edge semiconductor lithography & patterning. The company has developed the OVALiS Suite, which provides unprecedented improvements of on-product optimization. Simulation, diagnostics, monitoring and process control for the optimal on-product performance. Qoniac has customers and representatives in the all key markets. The acquisition by KLA in 2019 will enhance Qoniac's technical footprint. Contact: Saveen Krishnamurthy, Director Sales & Marketing, saveen.krishnamurthy@qoniac.com

### Raith America, Inc.

#116

1377 Long Island Motor Parkway Ste 101, Islandia, NY, 11749 United States  
+1 631 738 9500; fax +1 631 738 2055  
sales@raithamerica.com; www.raith.com

Raith is a leading precision technology manufacturer for focused ion beam (FIB-SEM) nanofabrication, large area scanning electron microscopy (SEM), and electron beam lithography (EBL) instrumentation. With sub-5 nm patterning performance, Raith instruments are enabling researchers in academic and industry environments to continuously advance their applications in applied nanoscale research and development, as well as production of compound semiconductor components.

### SAES Group

#320

1122 E Cheyenne Mountain Blvd, Colorado Springs, CO, 80906 United States  
+1 719 576 3200; fax +1 719 576 5025  
susa\_custserv@saes-group.com; www.saesgroup.com

**Featured Product: SAES GROUP is the global leader in Non-Evaporable Getter (NEG) pumps.**

SAES GROUP is the global leader in Non-Evaporable Getter (NEG) pumps used in a variety of high and ultra-high vacuum applications. The usage of SAES NEG pumps in electron microscopy and lithography systems allows to transport the electron guns under vacuum in total absence of power, making the installation easier and faster. Contact: Russell Graybehl, Senior Sales Engineer, rng@saes-group.com; Andrea Cadoppi, Business Area Manager, andrea\_cadoppi@saes-group.com



## Sage Design Automation, Inc. #103

**SPIE** Corporate Member

2075 de La Cruz Blvd Ste 105, Santa Clara, CA, 95050-3035 United States

+1 408 727 6294; fax +1 508 727 6288

info@sage-da.com; www.sage-da.com

**Featured Product: SLiC: Standardcell Library Compiler. A complete cell library from netlist to layout in 1 day.**

Sage-DA provides new solutions for agile technology path-finding and Design-Technology Co-Optimization. Sage tools enable an order of magnitude faster DTCO cycles and the ability to explore many more combinations of process assumptions and design constraints for thorough analysis of their interactions and PPAC trade-offs. Sage tools include logic cell library compiler, design rule editor, instant DRC, design rule impact analysis and test layout generation for validation of DRC runsets. Contact: Coby Zelnik, President, c.zelnik@sage-da.com; Raul Camposano, CEO, r.camposano@sage-da.com

## SCIL Nanoimprint Solutions #316

De Lismortel 31, Eindhoven, 5612 AR Netherlands

+31 6 51087938

rob.voorkamp@scil-nano.com; www.scil-nano.com

**Featured Product: Nanoimprint lithography tools, nanoimprint resist, nanoimprint processes**

Substrate Conformal Imprint Lithography (SCIL) is a cost effective, robust, high yield process enabling nanometer resolution patterns on a large variety of materials. It can be used to make high quality structures on wafer areas up to 200 mm with feature sizes down to less than 10 nm and overlay alignment down to 1 µm. We help customers with optimized equipment, consumable materials and processes for high volume production. Contact: Rob Voorkamp, CEO, rob.voorkamp@scil-nano.com; Marc Verschuuren, CTO, marc.verschuuren@scil-nano.com

### SPONSOR

## SCREEN SPE USA, LLC #201

820 Kifer Rd Ste B, Sunnyvale, CA,

94086-5214 United States

+1 408 594 6021;

fax +1 408 523 9150

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

**SCREEN**

**Featured Product: Coat/Develop Track, DT-3000, SK-60EX/80EX, RF310A, SC-80EX, Direct Imaging System, DW-6000/3000**

SCREEN SPE USA (SEUS) was established in 1987 in Sunnyvale, California. SEUS is the sales, marketing, engineering and service organization responsible for operations in the US market for SCREEN Semiconductor Solutions, Co. Ltd., Kyoto, Japan. SEUS has 8 major local offices in the US to better serve our customers. Our products include lithography coat/develop, wet cleaning/etching, thermal annealing and metrology applications. SCREEN is well known in manufacturing the most reliable equipment. Contact: Luke Chang, Program Director, luke.chang@screen-spe.com; Ian Brown, VP of Engineering, ian.brown@screen-spe.com

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# EXHIBITOR DIRECTORY

## Seiwa Optical America Inc. #111

**SPIE** Corporate Member

3042 Scott Blvd, Santa Clara, CA, 95054-3301 United States  
+1 408 844 8008; fax +1 408 844 8944  
info@seiwaamerica.com; www.seiwaamerica.com

**Featured Product: IR-2200 microscope allows the user to inspect sub-surface images including MEMS devices and wafers.**

For over 50 years, SEIWA OPTICAL has been a provider of standard and customizable optical solutions for machine vision, inspection, and industrial processing. We have offices established worldwide and are also a distributor for industrial vision products. Contact: info@seiwaamerica.com

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### PROMOTIONAL PARTNER

## Semiconductor Digest #314

58 Summer St, Andover, MA, 01818 United States  
+1 978 580 4205  
kerryh@semiconductordigest.com; www.semiconductor-digest.com

Through a mix of news, contributed articles and staff-written articles, Semiconductor Digest is dedicated to providing information about the design, manufacturing, packaging and testing of semiconductors and other types of electronic devices, including MEMs, LEDs, displays, power electronics, optoelectronics/photronics, biomedical devices, solar cells, thin film batteries and flexible electronics. With global coverage, Semiconductor Digest consists of a website, a magazine, and newsletters. Contact: Kerry Hoffman, Publisher, kerryh@semiconductordigest.com; Pete Singer, Editor-in-Chief, psinger@semiconductordigest.com

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## SEQENS #118

**SPIE** Corporate Member

725 Trotter St, Saint-Jean-Sur-Richelieu, QC, J3B 8J8 Canada  
+1 450 348 0901; fax +1 450 349 1528  
orderdesk@seqens.com; www.seqens.com

SEQENS is a technology-oriented fine chemical group serving global industrial customers since 1962. Our core expertise is the development and production of high quality materials (polymers and small molecules) for Life Sciences and Specialty Chemicals markets, such as Lubricant, Cosmetics and Electronics. Our customers within the Electronic industry use our products in Photolithography/Microelectronics (Resist, ARC, Additives) and Printed Electronics (OLED, OFET, OPV) applications. Contact: Andréanne Bolduc, Sales and Marketing Manager, andreanne.bolduc@seqens.com; Francis Bélanger, Director Customer Relationship, francis.belanger@seqens.com

## Shin-Etsu MicroSi, Inc. #110

**SPIE** Corporate Member

10028 S 51st St, Phoenix, AZ, 85044-5203 United States  
+1 480 893 8898; fax +1 480 893 8637  
info@microsi.com; www.microsi.com

**Featured Product: advanced photoresists, mask blanks, synthetic quartz**

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: Jake Hansen, Customer Development, jhansen@microsi.com

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## Synopsys, Inc. #204

**SPIE** Corporate Member

690 E Middlefield Rd, Mountain View, CA, 94043-4010 United States  
+1 650 584 5000; fax +1 650 584 4102  
info@synopsys.com; www.synopsys.com

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.

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### SPONSOR

## TEL - Tokyo Electron U.S. Holdings #113

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



As a leading global company of semiconductor and flat panel display production equipment, Tokyo Electron Limited (TEL) engages in development, manufacturing, and sales in a wide range of product fields. All of TEL's semiconductor and FPD production equipment product lines maintain high market shares in their respective global segments. TEL provides outstanding products and services to customers through a global network of approximately 75 locations in 16 countries in the U.S., Europe, and Asia. Contact: Rob Crowell, rob.crowell@us.tel.com

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## Vistec Electron Beam GmbH #221

Ilmstr 4, Jena, 07743 Germany  
+49 3641 799 80; fax +49 3641 7998 222  
electron-beam@vistec-semi.com; www.vistec-semi.com

**Featured Product: Vistec SB250series & Vistec SB3050series**

As a long-standing equipment supplier, Vistec Electron Beam GmbH is providing 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 electron-beam direct write in semiconductor manufacturing, mask making as well as integrated optics and several new emerging markets. Contact: Ines Stolberg, Manager Marketing & Sales, ines.stolberg@vistec-semi.com; John Whittey, Business Development Manager, john.whittey@vistec-semi.com

## XEI Scientific, Inc.

#121

**SPIE** Corporate Member

1755 E Bayshore Rd Ste 17, Redwood City, CA, 94063-4153 United States

+1 650 369 0133; fax +1 650 363 1659

sales@evactron.com; www.evactron.com

### Featured Product: Evactron® De-Contaminators

Evactron® De-Contaminators by XEI Scientific are world leaders in remote RF plasma cleaning of hydrocarbon contamination in vacuum chambers. Evactron plasma cleaners use a unique, energy-efficient hollow cathode plasma source to generate oxygen radicals plus UV for dual-action removal of adventitious carbon at turbo pump pressures. The new Evactron 50 De-Contaminator outperforms other remote plasma cleaners and is easy to use, powerful, compact, and low cost. Contact: Barbara Armbruster, Director of Sales and Marketing, barbara@evactron.com; Meg Price, Marketing Administrator, meggie@evactron.com

## Zygo Corporation

#205

**SPIE** Corporate Member

21 Laurel Brook Road, Middlefield, CT, 06455-1291 United States

+1 860 347 8506; fax +1 860 347 8372

inquire@zygo.com; www.zygo.com

For 50 years, Zygo Corporation is a leading global provider of comprehensive metrology solutions, precision optics, and electro-optical design and manufacturing services for the both research and production applications. The company designs and manufactures some of the world's most advanced noncontact 3D measurement systems providing unmatched performance, versatility, reliability, and value. Contact: Ernesto Abruna, Product Manager, Ernesto.abruna@ametec.com; Joe Salemi, Product Manager, Joe.salemi@ametec.com



Photo credit: Nguyen Khanh Hoang



## International Day of Light

16 May

The International Day of Light is a global initiative highlighting to the citizens of the world the importance of light and light-based technologies in their lives, for their futures, and for the development of society.

**SPIE supports the International Day of Light and its annual celebration on 16 May.**



### SPIE IDL GRANTS

SPIE will provide seed funding up to US\$3,000 to organizations creating Day of Light activities.



### IDL RESOURCES

SPIE encourages communities to plan their own annual celebration on 16 May and provides various resources to help create an event.



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attocube systems Inc.  
Coventor, Inc.  
Energetiq Technology, Inc.  
Heidelberg Instruments Inc.  
Raith America, Inc.  
SCIL Nanoimprint Solutions  
SEQENS  
Synopsys, Inc.  
Vistec Electron Beam GmbH  
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## BIOMEDICAL, MEDICAL IMAGING, HEALTH CARE

attocube systems Inc.  
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Seiwa Optical America Inc.

## CAMERAS AND IMAGING SYSTEMS

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Carl Zeiss SMT GmbH  
Raith America, Inc.  
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Carl Zeiss SMT GmbH

## CONSULTING SERVICES

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Gudeng Precision Industrial Co., Ltd.  
Sage Design Automation, Inc.  
Synopsys, Inc.

## CONSUMER ELECTRONICS

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SCIL Nanoimprint Solutions

## DEFENSE, SECURITY, LAW ENFORCEMENT

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PM B.V.  
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SCIL Nanoimprint Solutions

## DETECTORS, SENSORS

CyberOptics Corp.

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Heidelberg Instruments Inc.  
Osiris International GmbH  
Raith America, Inc.  
SCIL Nanoimprint Solutions  
Seiwa Optical America Inc.  
SEQENS

## DISTRIBUTOR, RESELLER, INTEGRATOR

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Gudeng Precision Industrial Co., Ltd.

## EARTH SCIENCES, ENVIRONMENTAL MONITORING, CLIMATE

XEI Scientific, Inc.

## ELECTRONIC COMPONENTS

Cosmotec, Inc.

## ELECTRONIC, DIGITAL IMAGING

Carl Zeiss SMT GmbH

## EMERGING PHOTONICS TECHNOLOGIES

Coventor, Inc.  
SCIL Nanoimprint Solutions

## INDUSTRIAL SENSING AND MEASUREMENT

attocube systems Inc.  
Gudeng Precision Industrial Co., Ltd.  
XEI Scientific, Inc.

## INFORMATION PROCESSING AND COMPUTING

Coventor, Inc.  
Vistec Electron Beam GmbH

## LASER INDUSTRY

Vistec Electron Beam GmbH

## LED, OLED, NON-LASER LIGHT SOURCES

Canon U.S.A., Inc.  
Energetiq Technology, Inc.  
Seiwa Optical America Inc.

## LITHOGRAPHIC EQUIPMENT

Canon U.S.A., Inc.  
Carl Zeiss SMT GmbH  
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Energetiq Technology, Inc.  
Gudeng Precision Industrial Co., Ltd.  
Heidelberg Instruments Inc.  
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SEQENS  
Vistec Electron Beam GmbH

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# PRODUCT CATEGORIES

## MACHINE VISION, FACTORY AUTOMATION

CEROBEAR GmbH  
Gudeng Precision Industrial Co., Ltd.  
PM B.V.  
Seiwa Optical America Inc.

## MATERIALS PROCESSING, LASERS IN MANUFACTURING

attocube systems Inc.

## MATERIALS, ABRASIVES, CHEMICALS

JSR Micro, Inc.  
Kayaku Advanced Materials, Inc.  
SEGENS

## MICROSCOPES

attocube systems Inc.  
Carl Zeiss SMT GmbH  
JEOL USA Inc.  
Raith America, Inc.  
Seiwa Optical America Inc.  
XEI Scientific, Inc.

## MICROTECHNOLOGY

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Coventor, Inc.  
Energetiq Technology, Inc.  
Heidelberg Instruments Inc.  
Kayaku Advanced Materials, Inc.  
Osiris International GmbH  
Vistec Electron Beam GmbH

## MISC CONSUMABLES AND EQUIPMENT

XEI Scientific, Inc.

## MOUNTS, TABLES, VIBRATION ISOLATION

CEROBEAR GmbH

## NANOTECHNOLOGY PRODUCTS

Canon U.S.A., Inc.  
Cosmotec, Inc.  
Energetiq Technology, Inc.  
Kayaku Advanced Materials, Inc.  
Osiris International GmbH  
SCIL Nanoimprint Solutions  
XEI Scientific, Inc.

## OPTICAL COATINGS, THIN FILMS

Osiris International GmbH

## OPTICAL COMPONENTS - FILTERS, MIRRORS, OTHER

XEI Scientific, Inc.

## OPTICAL COMPONENTS - LENSES

Seiwa Optical America Inc.

## OPTICAL DESIGN AND ENGINEERING

Coventor, Inc.

## OPTICAL FABRICATION EQUIPMENT

Canon U.S.A., Inc.  
SCIL Nanoimprint Solutions

## OPTICS MANUFACTURING

Canon U.S.A., Inc.  
Osiris International GmbH  
Seiwa Optical America Inc.

## OPTOMECHANICAL COMPONENTS, DEVICES

CEROBEAR GmbH

## PHOTONIC INTEGRATION

Canon U.S.A., Inc.  
SCIL Nanoimprint Solutions

## POSITIONING EQUIPMENT, MOTION CONTROL AND ACCESSORIES

attocube systems Inc.  
CEROBEAR GmbH  
PM B.V.  
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## SEMICONDUCTOR MANUFACTURING

Cadence Design Systems, Inc.  
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Coventor, Inc.  
Energetiq Technology, Inc.  
Heidelberg Instruments Inc.  
Kayaku Advanced Materials, Inc.  
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## SOLAR AND ALTERNATIVE ENERGY TECHNOLOGY

SEGENS

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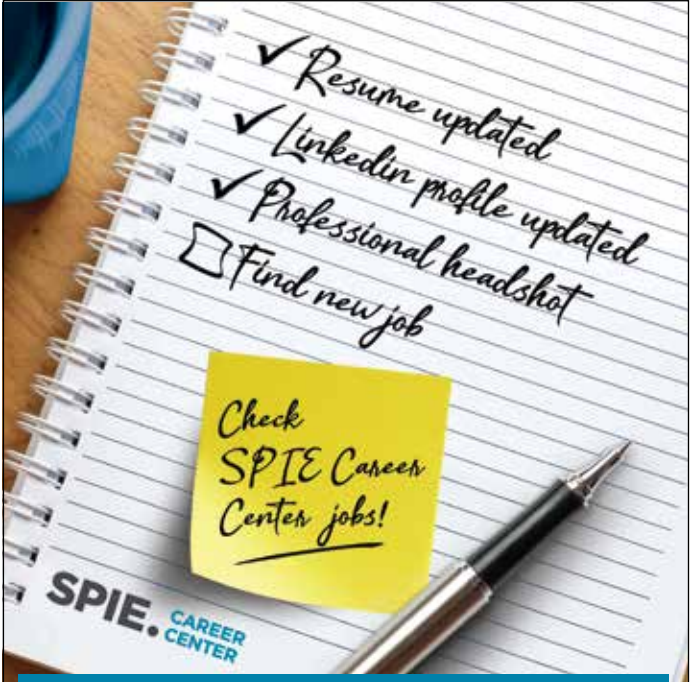
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## TEST AND MEASUREMENT, METROLOGY

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Attendee agrees to release and hold harmless SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

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It is SPIE policy that all employees, volunteers, and participants are entitled to respectful treatment. Any form of bullying, discrimination, harassment, sexual or otherwise, is unacceptable and will not be tolerated. This policy applies to all locations and situations where SPIE business is conducted and to all SPIE-sponsored activities and events.

Read complete policy <http://spie.org/harassment>

### Attendee Registration and Admission Policies

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 of or to remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, 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 anyone 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.

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### Code of Conduct

SPIE is committed to providing a harassment- and discrimination-free experience for everyone at our events, an experience that embraces the richness of diversity where participants may exchange ideas, learn, network, and socialize in the company of colleagues in an environment of mutual respect.

Read complete Code: <http://spie.org/conduct>

### Event Cancellation Policy

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

### Family-Friendly Policy

Conference Events: All conference technical and networking events require a badge for admission. Registered attendees may bring children with them if they have been issued a badge. Registration badges for children under 18 are free and available at the SPIE registration desk onsite. Children under 14 years of age must be accompanied by an adult at all times, and guardians are asked to help maintain a professional, disturbance-free conference environment.

**Exhibition Hall:** Everyone who attends the exhibition must be registered and have a badge. Badges for children are free and available onsite at the registration desk. Children under 14 years of age must be accompanied by an adult at all times. Guardians are asked to help maintain a professional, disturbance-free exhibition environment. Children under 18 are not allowed in the exhibition area during exhibition move-in and move-out.

# SPIE EVENT POLICIES

## Identification Requirement

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued photo identification at registration to collect registration materials. Individuals are not allowed to pick up badges for other attendees. 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.

## Laser Pointer Safety Policy

SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers. Use of a personal laser pointer represents the user's acceptance of liability for use of a non-SPIE-supplied laser pointer. If you choose to use your own laser pointer, you must have it tested at Speaker Check-in.

## No-Smoking Policy

Attendees will observe all non-smoking regulations that are publicly posted by the facilities used by the event.

## Payment Policy

Registrations must be fully paid before access to the conference is allowed. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks and wire transfers. Onsite registrations can also be paid with cash.

## Recording Policy

Conferences, courses, and poster sessions: For copyright reasons, recordings of any kind are prohibited without prior written consent of the presenter or instructor. Attendees may not capture or use materials presented in any meeting/course room or in course notes on display without written permission. Consent forms are available at Speaker Check-In or SPIE Registration. Individuals not complying with this policy will be asked to leave a given session and/or asked to surrender their recording media. Refusal to comply with such requests is grounds for expulsion from the event. Exhibition Hall: Recordings of any kind are prohibited without explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their recording media and to leave the exhibition hall. Refusal to comply with such requests is grounds for expulsion from the event.

## Reporting of Unethical or Inappropriate Behavior

Onsite at an SPIE meeting, contact any SPIE Staff with concerns or questions. If you feel in immediate danger, please dial the local emergency number for police intervention. SPIE has established a confidential reporting system for staff and all meeting participants to raise concerns about possible unethical or inappropriate behavior within our community. Complaints may be filed by phoning toll-free to +1-888-818-6898 from within the United States and Canada or online at [www.SPIE.ethicspoint.com](http://www.SPIE.ethicspoint.com) and may be made anonymously.

## Unauthorized Solicitation

Unauthorized solicitation in the Exhibition Hall is prohibited. Any nonexhibiting 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.

## Unsecured Items

Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. SPIE is not responsible for items left unattended.

## Wireless Internet Service

At most events, SPIE provides wireless access for attendees. Properly secure your computer before accessing the public wireless network. SPIE is not responsible for computer viruses or other kinds of computer damage.

## SPIE International Headquarters

PO Box 10  
Bellingham, WA 98227-0010 USA  
Tel: +1 360 676 3290  
Fax: +1 360 647 1445  
[help@spie.org](mailto:help@spie.org) • [www.SPIE.org](http://www.SPIE.org)

## SPIE Europe Offices

2 Alexandra Gate  
Ffordd Pengam, Cardiff, CF24 2SA UK  
Tel: +44 29 2089 4747  
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**SCIENCE IS FOR EVERYONE**

**EQUITY**  
 Is access to opportunities, fair treatment, and advancement for all people; it's about eliminating barriers that prevent full participation.

**DIVERSITY**  
 Includes all the ways in which people differ—identity markers such as race, ethnicity, gender, ability, sexual orientation, and more.

**INCLUSION**  
 Goes beyond diversity: it's the act of creating an environment where everyone feels welcomed, respected, supported, and valued.

[spie.org/inclusion](http://spie.org/inclusion)

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**Abstracts due 2 April 2020**

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SPIE is pleased to announce the 2020 winners of select SPIE Awards, honoring the best in optics and photonics for their significant achievements and contributions in advancing the science of light.



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Airborne Optics



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