



# 2011 Optifab

Moving Technology to Market™

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## Exhibition Guide

**Exhibition Dates:** 10–12 May 2011  
**Conference and Course Dates:** 9–12 May 2011  
Rochester Riverside Convention Center  
Rochester, New York, USA  
[spie.org/optifab](http://spie.org/optifab)

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Optics Manufacturers  
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# SPIE Optifab

Exhibition Dates: 10–12 May 2011  
Conference Dates: 9–12 May 2011  
Rochester Riverside Convention Center  
Rochester, New York, USA



## Conference Chairs



**James 'Jay' Kumler**, JENOPTIK Optical Systems, Inc. (USA)



**Matthias Pfaff**, OptoTech Optikmaschinen GmbH (Germany)

## Exhibition Chairs



**James M. Sydor**, Sydor Optics, Inc. (USA)



**Richard A. Nasca**, Corning Tropol Corp. (USA)

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**Kirk J. Warden**, LaCroix Optical Co. (USA)

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SPIE and APOMA are dedicated to promoting and advancing science, technology and business opportunities for the precision optics industrial base.





# North America's Premier OPTICAL FABRICATION EXHIBITION



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### **About SPIE**

SPIE is an international society advancing an interdisciplinary approach to the science and application of light. SPIE.org

### **About APOMA**

The American Precision Optics Manufacturers Association represents a broad constituency of precision optics manufacturers, and the supporting industry along with academic associates, whose mutual interest is the advancement and expansion of optics manufacturing and technology. APOMA.org

# General Information



## Rochester Riverside Convention Center

123 East Main St, Rochester, NY 14604-1619  
Tel: (585) 232-7200, Fax: (585) 232-1510, www.rccc.com

### Exhibition Hours:

Tuesday 10 May . . . . . 10:00 am to 5:00 pm  
Wednesday 11 May. . . . . 10:00 am to 6:00 pm  
Thursday 12 May. . . . . 10:00 am to 3:00 pm

### Registration Hours

Rochester Riverside Convention Center  
Empire Lobby, Exhibit Level

Sunday 8 May . . . . . 7:30 am to 4:00 pm\*  
\*Exhibitors only  
Monday 9 May. . . . . 7:30 am to 5:00 pm  
Tuesday 10 May . . . . . 7:30 am to 5:00 pm  
Wednesday 11 May. . . . . 7:30 am to 6:00 pm  
Thursday 12 May. . . . . 7:30 am to 3:00 pm

## Policies

### Audio, Video, Digital Recording Policy

**In the Meeting Rooms and Poster Sessions:** For copyright reasons, recordings of any kind are strictly prohibited without prior written consent of the presenter in any conference session, course or of posters presented. Each presenter being taped must file a signed written consent form. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their film or recording media. Consent forms are available at the SPIE Registration Desk.

**In the Exhibition Hall:** For security and courtesy reasons, photographing or videotaping individual booths and displays in the exhibit hall is allowed ONLY with explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their film and to leave the exhibit hall.

### Underage Persons on the Exhibition Floor

For safety and insurance reasons, no persons 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.

## Complimentary Wireless Internet Access

Open during Registration Hours  
Empire Lobby, Exhibit Level

Sponsored by:



## The SPIE Cashier can assist with:

- **Registration Payments** - If you are paying by cash or check as part of your onsite registration, wish to add a course, workshop, or special event requiring payment, or have questions regarding your registration, please see the onsite cashier at the Cashier station in the registration area.
- **Receipts** - Preregistered attendees who did not receive a receipt prior to the meeting may obtain a new copy of their registration receipt onsite at the SPIE Cashier station in the registration area.
- **Badge Corrections** - Attendees who need a correction to their badge information onsite may do so at the SPIE Cashier station in the registration area. Please have your badge removed from the badge holder, marked with your changes, and ready to hand to the attendant upon approaching the counter.

## Urgent Message Line

Messages will be taken during registration hours Monday through Thursday by calling the SPIE Urgent Message line at +1 585 770-2360.

## Coffee Breaks

Tuesday morning coffee break  
Sponsored by:



Complimentary coffee will be served twice each day in the Exhibition Hall Tuesday through Thursday. Please check the individual technical conference listings for exact times.

## Cash Lunches and Exhibition Concessions

Visit the Café Express located in the back of the exhibition halls on Tuesday, Wednesday, and Thursday featuring domestic and international cuisine. They will serve hot and cold snacks, beverages, deli-type sandwiches, salads, hot entrees, and pastries and will be open daily 11:00 am to 2:00 pm.

## Unauthorized Solicitation

Any manufacturer or supplier who is not an exhibitor and is observed to be soliciting business in the aisles, or in another company's booth, will be asked to leave immediately. Unauthorized solicitation in the Exhibition Hall is prohibited.

## Unsecured Items

Personal belongings such as briefcases, backpacks, coats, book bags, etc., should not be left unattended in meeting rooms or public areas. These items will be subject to removal by security upon discovery.

# Daily Event Schedule

Monday	Tuesday	Wednesday	Thursday	
<b>Technical Conference</b> ( <i>Kumler, Pfaff</i> )				
<b>SC1040</b> Geometric Dimensioning and Tolerancing (Prystaj) 8:30 am to 5:30 pm	<b>SC1019</b> Mounting of Optical Components (Burge) 8:30 am to 5:30 pm	<b>WS1042</b> Patenting Fundamentals for Optics Professionals (Hammond, Gunderman) 8:30 to 11:30 am	<b>SC321</b> Thin Film Optical Coatings (MacLeod) 8:30 am to 5:30 pm	
<b>SC212</b> Modern Optical Testing (Wyant) 8:30 am to 12:30 pm	<b>SC1038</b> Optical Engineering Fundamentals (Walker) 8:30 am to 12:30 pm			
<b>SC350</b> Optical Manufacturing Overview (Novak) 8:30 am to 5:30 pm	<b>SC1039</b> Evaluating Aspheres for Manufacturability (Forbes, Murphy, Dumas) 1:30 to 5:30 pm	<b>SC1041</b> Computer Generated Holograms for Optical Testing (Zhao) 1:30 to 5:30 pm	<b>SC1011</b> Understanding Waviness and Roughness Specifications for Optics (Aikens) 8:30 am to 12:30 pm	
<b>SC848</b> Fundamentals of Single Point Diamond Turning (Schaefer) 1:30 to 5:30 pm	<b>SC700</b> Understanding Scratch and Dig Specifications (Aikens) 1:30 to 5:30 pm	<b>SC015</b> Structural Adhesives for Optical Bonding (Daly) 1:30 to 5:30 pm		
See SPIE Cashier to register for the Technical Conference or a course.	<b>Exhibition</b>			
	10:00 am to 5:00 pm		10:00 am to 6:00 pm	10:00 am to 3:00 pm
	<b>Exhibitor Product Demonstrations, 10:30 to 3:00 pm, p. 6</b>			
	<b>Industry Panel Discussions –</b> <i>Empire Hall, 2:00 to 4:30 pm, p. 4</i>		<b>Networking Reception and Poster Viewing,</b> <i>Empire Hall, 4:30 to 6:00 pm</i>	



## New York Industry Association

[www.newyorkphotonics.org](http://www.newyorkphotonics.org)

Promoting New York State's photonics, optics, and imaging industry through cluster-based initiatives. Programs and services to help New York State companies increase visibility, grow sales, reduce costs, and attract the best talent. Group promotions, networking, information transfer, discount purchasing, government liaison, and workforce development. Host of NYS Pavilions at major trade shows.

### New York State Pavilion Participants at Optifab 2011:

**AccuCoat, Inc.**  
Booth #503

**Advanced Glass Industries**  
Booth #502

**Applied Image, Inc.**  
Booth #501

**Corning Inc.**  
Booth #506

**Evaporated Metal Films Corp.**  
Booth #1326

**JML Optical Industries Inc.**  
Booth #1318

**Metrology Concepts LLC**  
Booth #1324

**Optics Technology, Inc.**  
Booth #510

**Optimax Systems, Inc.**  
Booth #505

**PhaseView**  
Booth #511

**Photon Gear, Inc.**  
Booth #1322

**R.W. Lindsay Inc.**  
Booth #507

**Spectra Services**  
Booth #511

**Swift Glass Co.**  
Booth #509

**Sydor Optics, Inc.**  
Booth #500

**University of Rochester,  
The Institute of Optics**  
Booth #504

# Special Events

## Industry Panel Discussions

Wednesday 11 May • 2:00 to 4:30 pm • Location: Empire Hall

2:00 to 3:00 pm

### The Forbes Polynomial Surface: The Road Forward; A Return to Manufacturable Aspheres



Panel Moderator: **Kevin P. Thompson**,  
Synopsys, Inc. (USA)

Panelists:

**Gregory W. Forbes**, QED Technologies Inc./Cabot Microelectronics Corp. (Australia)

**Jessica DeGroot Nelson**, Optimax Systems, Inc. (USA)

**Sven Kiontke**, asphericon GmbH (Germany)

**John R. Rogers**, Synopsys, Inc. (USA)

**Dave Stephenson**, JENOPTIK Optical Systems, Inc. (USA)

**David M. Aikens**, Savvy Optics Corp. (USA)

**Christoph Menke**, Carl Zeiss AG (Germany)

The first (credible) patented optical system with an asphere was assigned to none other than Ernst Abbe, in 1899. He chose to express the departure of the surface from a sphere as a power series in the even orders of the aperture radius. What could be better? 100 years plus a few late we learn through hard knocks that such a power series has painful failings as the number of included terms grows.

As an optical designer and the Director of a significant group of optical designers that have designed over 1,000 systems that have been built for the last 30 and 20 years respectively, nothing has been quite as startling to me as Greg Forbes/QED and John Rogers/Synopsys (formerly ORA) work in recent years that clearly demonstrates that applying a power series asphere to an optical surface, with more than (let's pick a number) 4 terms (i.e. B, C, D, E) is a serious problem that has evolved rapidly though chance, circumstance, and evolution to become real threat to our entire industry (unless you are designing a lithography lens).

This panel forum is being assembled in the continuing quest to raise the significance of this otherwise benign looking issue to the status it deserves. The hour will begin with an overview and quantification of the scope of the problem and a short "how did we get here" by Greg Forbes/QED and moderator, Kevin Thompson/Synopsys followed by an open interaction with the panel members.

The panel will consist of representatives from lens design, lens tolerance setting, lens specification and standards, lens fabrication, and lens testing. In addition, representatives of lens design software and lens fabrication and testing equipment will be in the audience. If you are involved in any part of an optical system development that could involve an aspheric surface, you want to be at this session both to hear and to be heard.

This session follows on the impromptu "session" at the Optical Fabrication and Testing Conference, collocated with the IODC in Jackson Wyoming last year, and is part of a series of sessions being planned for this year as the tools to cope with and adjust to the future of aspheres become available and integrate with the industrial process. We strongly encourage your attendance and participation in this industry critical transition.

3:30 to 4:30 pm

### The Future of Optical Manufacturing in North America



Panel Moderator: **Thomas Battley**,  
New York Photonics Industry Association (USA)

Panelists:

**Robert M. Edmund**, Edmund Optics Inc. (USA)

**Michael Toro**, SCHOTT North America, Inc. (USA)

**Stephen D. Fantone**, Optikos Corp. (USA)

**Chris L. Koliopoulos**, Zygo Corporation (USA)

**Andrew W. Kulawiec**, QED Technologies, Inc. (USA)

Join us in this one-hour forum where business leaders from the photonics industry in North America will discuss new technologies, trends and future opportunities in optical manufacturing in North America. Moderated by Tom Battley, Executive Director of the New York Photonics Industry Association, our panel will answer questions about market conditions, research and development trends, emerging markets and outlook for the future.

Example topics/questions for the panel

- What emerging markets and applications hold the most promise for the photonics industry?
- What challenges does your business face in the current market conditions?
- How important are supplier-customer collaborations to speed time to market? What about industry-university collaborations?
- Where are you making the largest investments? (technology, infrastructure, capacity, people)
- Is globalization an opportunity or a threat to US optical manufacturing companies?
- How do you accelerate innovation?
- How can the optics industry foster entrepreneurship?

Moderator Tom Battley was appointed Executive Director of the Rochester Regional Photonics Cluster in June, 2004, and Executive Director of The New York Photonics Industry Association in September that same year. Prior to that Tom was Monroe County Economic Development Director for nine years, overseeing a staff responsible for assisting businesses in achieving their objectives using a variety of financial vehicles, tax incentives, and job training programs. During Tom's tenure Monroe County participated in \$2.4 Billion in business investment in the Rochester Community, including major technology investments in Optics, Biotechnology Telecommunications, and Precision Manufacturing. Tom is a Certified Economic Development Finance Professional with the National Development Council.

## Networking Reception and Poster Session

Wednesday 11 May • 4:30 to 6:00 pm

All attendees are invited to relax, socialize, and enjoy refreshments. Conference posters will be on display. Poster authors will be present for discussion about their research.

## Award Presentations

The American Precision Optics Manufacturing Association will sponsor the following awards:

**Outstanding Student Poster:** Multiple \$200 travel grants will be awarded to students presenting posters.

**Student Paper Awards:** A \$1,000 award for Exceptional Student Paper and a \$750 award for Outstanding Student Paper as judged by a panel of APOMA industry representatives will be made at the meeting.



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OPTICS & PHOTONICS  
International 2012



# LENS EXPO

Organizer: Optical Society of Japan  
Japan Photonics Council

**25-27** April, 2012

**Pacifico Yokohama, Japan**

Co-located with

**LE LASER EXPO**

**UV IR + UV EXPO**

**VISION Japan**

**Optical Fiber Expo**

**POSITIONING EXPO**

Total Projected Participation

- Exhibitors 400
- Attendees 12,000



For further information <http://www.optronicsjp.com/>

The Optronics Co., Ltd. International Dept. E-mail: [intl@optronics.co.jp](mailto:intl@optronics.co.jp)

# Product Demonstrations

Product Demonstrations are located in the Empire Hall • Open to all attendees.

Exhibiting companies will showcase new and successful products in half-hour demonstrations.

TIME	Tuesday 10 May	Wednesday 11 May	Thursday 12 May
10:30 am		<p><b>Q-flex - Next Generation MRF from QED Technologies</b></p> <p><b>Paul Dumas, QED Technologies</b> Q-flex, QED's new modular 5-axis MRF system, allows fast fluid and polishing head changes and the flexibility to polish, from spheres to full freeform and off-axis aspheres. Demo in QED booth 215.</p>	<p><b>Compact Grinding and Polishing with new PRO 80 Series</b></p> <p><b>Mike Bechtold, OptiPro Systems</b> OptiPro's new PRO 80 Series: Single and Twin Spindle Grinding, Hi-Speed Polishing and UltraForm Finishing of 80mm lenses for prototypes to production. Compact, powerful and cost effective! Demo taking place in Booth 414.</p>
11:30 am	<p><b>Non-Contact Metrology For Manufacturing Freeform</b></p> <p><b>Scott DeFisher, OptiPro Systems</b> UltraSurf 5-Axis non-contact measurement for characterizing complex freeform optical surfaces. Interchangeable optical probes enables surface and thickness measurements of ground or polished parts. Demo taking place in Booth 414.</p>	<p><b>WaveGauge: Optics Tester for Aspherics, IOL &amp; Contact Lenses</b></p> <p><b>Igor Lyuboshenko, PhaseView</b> WaveGauge delivers accurate power, aberrations, EFL &amp; MTF measurements with unrivaled wavefront resolution, providing reliable quality control of complex spherical, aspheric or toric lenses.</p>	<p><b>UltraForm Finishing of Aspheres and Freeform Optics</b></p> <p><b>Scott Bambrick, OptiPro Systems</b> OptiPro's UltraForm Finishing is becoming the industry choice for sub-aperture polishing of plano, spherical, aspherical and freeform optics. Fast removal rates + high precision = big profits. Demo taking place in Booth 414.</p>
12:30 pm		<p><b>In-situ Roughness Measurement</b></p> <p><b>Bob Parks, Optical Perspectives Group, LLC</b> The MicroFinish Topographer (MFT) will be demonstrated. It can measure samples from a few mm in diameter up to astronomical mirrors without the need for replicas or vibration isolation.</p>	
1:30 pm	<p><b>CAMPos Postprocessor Interface</b></p> <p><b>Christian Leonhardt, Satisloh North America Inc.</b> Postprocessor interface between CAM-system and Satisloh machine.</p>		
2:00 pm		<p><b>Industry Panel Discussions</b></p> <p>2:00 to 4:30 pm See p. 4</p>	
2:30 pm	<p><b>Optikos LensCheck™</b></p> <p><b>Daniel Orband, Optikos Corporation</b> The LensCheck™ employs a compact unique mechanical design that ensures high accuracy linear and rotary motion in a rapid, economical, easy-to-use device.</p>		
3:00 pm			
4:30 pm			EXHIBITION CLOSED



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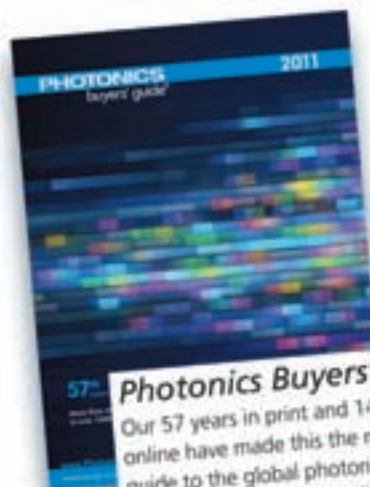
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 		<p><b>Coffee Break</b></p>  <p>Booth #215 www.qedmrf.com</p>
<p><b>Conference Bag</b></p>  <p>Booth #807 www.trioptics.com</p>	<p><b>Conference Bag Insert</b></p>  <p>Booth #807 www.trioptics.com</p>	 <p>Booth #411 www.slicingtech.com</p>
<p><b>Hotel Room Key Cards</b></p>  <p>Booth #500 www.sydor.com</p>	<p><b>Lanyards</b></p>  <p>Booth #1009 www.unitedlens.com</p>	<p><b>WiFi</b></p>  <p>Booth #700 www.jenoptik-inc.com</p>
<p><b>General Refreshment Sponsors</b></p> <p>Heraeus Quarz America LLC Booth #609 Larsen Equipment Design, Inc. Booth #702 Optics Technology Booth #510 QED Technologies Booth #215 R. Mathews Optical Works Inc. Booth #1328 Satisloh North America, Inc. Booth #515 Swift Glass Company Booth #509</p>		<p><b>Promotional Partners</b></p> <p>Electro Optics Magazine IOP Publishing Laser Focus World The Optronics Co., Ltd. Photonics Media Photonics Online</p>



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**SPIE**  
The international society for optics and photonics





# Photonics Online

## Where the future of photonics is found

Photonics Online is the leading Web site for the optics and photonics industry, serving the needs of industry professionals since 1997. We are your information source for everything related to optics and photonics technology, whether you are searching for product overviews, technical articles, or industry news ... or looking to market your products and services in this space. Take a guided tour below, and visit us at [www.photonicsonline.com](http://www.photonicsonline.com).



[www.photonicsonline.com](http://www.photonicsonline.com)

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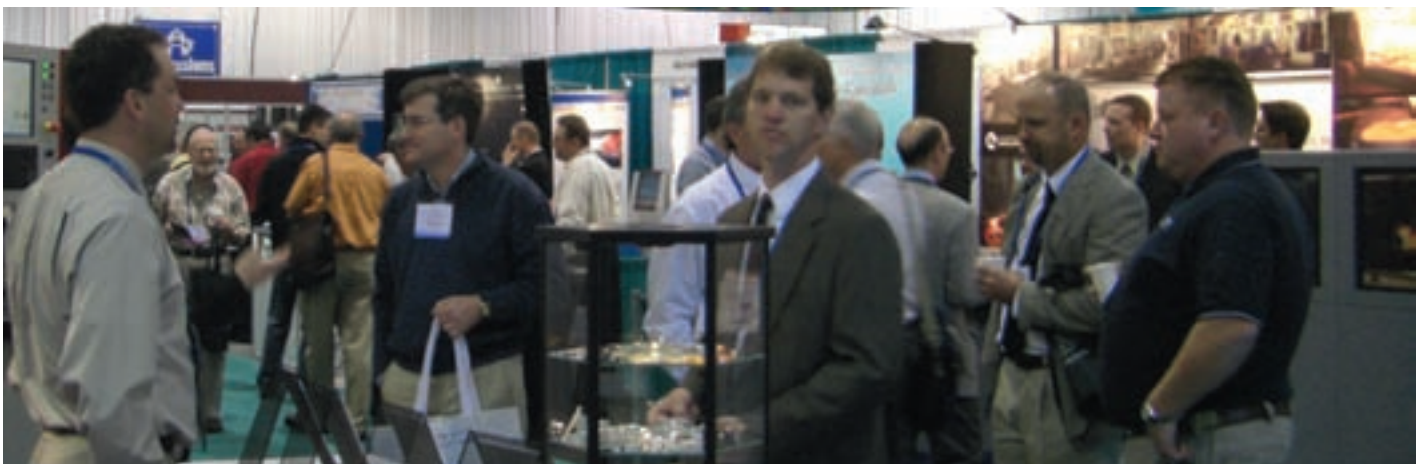
### 4. Community

Stay engaged with your peers in the industry through our active online community.

### 5. Top Ten

What articles, case studies, and white papers are your colleagues reading? Find out here.





## Exhibition Hours

*Rochester Riverside Convention Center · Empire Hall*

Tuesday . . . . . 10:00 am to 5:00 pm  
 Wednesday . . . . . 10:00 am to 6:00 pm  
 Networking Reception and  
 Poster Viewing . . . . . 4:30 to 6:00 pm  
 Thursday . . . . . 10:00 am to 3:00 pm

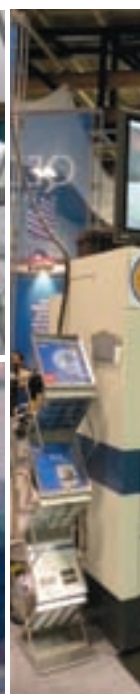
## How to use this directory

Exhibitors are listed in alphabetical order with details about products or services they are exhibiting. Companies are additionally cross-indexed by technology areas in the Product Index on pages 31–32, to allow you to quickly shop for products for your engineering and business needs. Booth numbers are provided in the Exhibitor Directory and may be cross-referenced with the map at right.

## Exhibitor Booth Index

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| <b>104</b> RSP Technology BV   | <b>303</b> Precision MicroDynamics Inc.                   | <b>503</b> AccuCoat, Inc.   | <b>706</b> Contour Fine Tooling                               |
| <b>105</b> NiCoForm, Inc.  | <b>304</b> Lytkarino Optical Glass Factory JSC            | <b>504</b> University of Rochester, The Institute of Optics       | <b>706</b> Technodiamant USA Inc.                             |
| <b>106</b> Hoya Corporation USA - Optics Division                            | <b>305</b> Dyna Technologies, Inc.                        | <b>505</b> Optimax Systems, Inc.                                  | <b>707</b> II-VI Infrared                                     |
| <b>107</b> Shanghai Modern Advanced Ultra Precision Manufacturing Center LTD | <b>306</b> OpTIC  | <b>506</b> Corning Incorporated                                   | <b>708</b> Mildex, Inc.                                       |
| <b>110</b> Wells Research & Development                                      | <b>306</b> Zeeko Ltd.                                     | <b>507</b> R.W. Lindsay Inc.                                      | <b>709</b> North American Coating Laboratories                |
| <b>111</b> Ferrotec (USA) Corp.  | <b>307</b> Angstrom Precision Optics Inc.                 | <b>509</b> Swift Glass Co.  | <b>711</b> Syntec Optics                                      |
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| <b>114</b> Magnus Precision Manufacturing, Inc.                              | <b>311</b> Wrisley Abrasives                              | <b>511</b> Spectra Services                                       | <b>800</b> G-S PLASTIC OPTICS                                 |
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| <b>116</b> Denton Vacuum, LLC  | <b>401</b> P.R. Hoffman Machine Products                  | <b>600</b> 4D Technology Corp.                                    | <b>802</b> PHASICS SA   |
| <b>116</b> INFICON   | <b>402</b> Isuzu Glass Inc.                               | <b>601</b> SCHOTT North America, Inc.                             | <b>803</b> DCM Tech, Inc.                                     |
| <b>116</b> T elemark   | <b>403</b> Optical Research Associates see Synopsys, Inc. | <b>602</b> Roth & Rau MicroSystems GmbH                           | <b>804</b> Fraunhofer Institute for Production Technology IPT |
| <b>200</b> Tecport Optics, Inc.  | <b>403</b> Synopsys, Inc.                                 | <b>603</b> T echmetals, Inc.                                      | <b>805</b> Intlvac  |
| <b>201</b> Bullen Inc.   | <b>404</b> Olympus America Inc.                           | <b>604</b> Loadpoint Bearings UK Ltd.                             | <b>806</b> Lambda Research Corp.                              |
| <b>203</b> TECHNOTRADE International, Inc.                                   | <b>405</b> Xactra Technologies                            | <b>605</b> Kugler of America LTD                                  | <b>807</b> Davidson Optronics, Inc.                           |
| <b>204</b> IOP Publishing Ltd.   | <b>406</b> Char don Tool                                  | <b>606</b> Valtech Corp.  | <b>807</b> TRIOPTICS GmbH                                     |
| <b>205</b> Optical Perspectives Group, LLC                                   | <b>407</b> Vacuum Process Technology LLC                  | <b>607</b> Hinds Instruments, Inc.                                | <b>808</b> Sagem  |
| <b>208</b> Vacuum Innovations  | <b>408</b> Delta Optics Technologies Pte Ltd.             | <b>608</b> Moore Nanotechnology Systems LLC                       | <b>810</b> Optix Co.  |
| <b>210</b> Photonics Online  | <b>409</b> Diacut, Inc.                                   | <b>609</b> Heraeus Quartz America LLC                             | <b>815</b> Universal Photonics, Inc.                          |
| <b>211</b> Diffraction International Ltd.                                    | <b>410</b> Salem Advanced Surfacing Materials             | <b>611</b> LaCroix Optical Co.                                    | <b>900</b> Photonics Media                                    |
| <b>212</b> Kreischer Optics, Ltd.  | <b>411</b> Slicing Tech                                   | <b>700</b> JENOPTIK Optical Systems, Inc.                         | <b>901</b> ZEMAX Development Corp.                            |
| <b>215</b> QED Technologies, Inc.  | <b>414</b> OptiPro Systems                                | <b>701</b> Precitech, Inc., a division of AMETEK                  | <b>903</b> Optikos Corp.                                      |
| <b>300</b> IRD Glass   | <b>500</b> Sydor Optics, Inc.                             | <b>702</b> DAC International, Inc.                                | <b>904</b> Miraclean Ultrasonics                              |
| <b>301</b> FLIR Systems  | <b>501</b> APPLIED IMAGE, Inc.                            | <b>702</b> Larsen Equipment Design, Inc.                          | <b>905</b> dopa diamond tools                                 |
|  |   | <b>704</b> International Business Council of Greater Rochester NY | <b>906</b> fineoptix GmbH                                     |
|  |   |   | <b>906</b> MPF Systems  |
|  |   |   | <b>907</b> ABTech Inc.  |
|  |   |   | <b>909</b> Leybold Optics                                     |
|  |   |   | <b>910</b> Precision Glass & Optics                           |





## Exhibitor Listing

### 4D Technology Corp.

#600

SPIE Corporate Member APOMA

3280 E Hemisphere Loop Ste 146, Tucson, AZ, 85706  
+1 520 294 5600; fax +1 520 294 5601  
info@4dtechnology.com; www.4dtechnology.com

**Featured Product: Compact FizCam 300 Interferometer for high spatial resolution measurement of flats, spheres, etc.**

4D Technology designs and manufactures dynamic laser interferometers for non-contact metrology of optical quality surfaces, even in the presence of vibration and turbulence. 4D systems provide high resolution acquisition of phase data in as little as 1microsec, at wavelengths from DUV through NIR. Applications include astronomy, aerospace, general optics, directed energy and more. Contact: Don Roberts, Eastern Region Sales Manager, don.roberts@4dtechnology.com; Chip Ragan, Director of North American Sales, chip.ragan@4dtechnology.com.

### ABTech Inc.

#907

SPIE Corporate Member

126 Monadnock Hwy, Swanzey, NH 03446  
+1 603 358 6431; fax +1 603 358 0196  
info@abtechmfg.com; www.abtechmfg.com

Air bearing MicroForm Gage for measuring runout, roundness, flatness, concentricity and wedge (ETV).

### AccuCoat, Inc.

#503

APOMA

111 Humboldt St Ste 8, Rochester, NY, 14609  
+1 585 288 2330; fax +1 585 288 2331  
office@accucoatinc.com; www.accucoatinc.com

AccuCoat Inc. is a supplier of thin film coatings on plastic, metal, glass and a variety of other components. Producing a wide range of antireflective, beamsplitter, hot & cold mirror, ITO, filter, hydrophobic and metal coatings as well as custom coatings to meet your dynamic applications. Experienced in handling prototype thru OEM volumes. Coatings available from the UV to the NIR. Over 60 years combined engineering experience can provide custom designed solutions. Contact: Alan Parsons, Sales Engineer, alan@accucoatinc.com.

### Advanced Glass Industries

#502

APOMA

PO Box 60467, 1335 Emerson St, Rochester, NY, 14606  
+1 585 458 8040; fax +1 585 458 8087  
agi@advancedglass.net; www.advancedglass.net

Manufacturer of molded and precision machined glass products. Services include precision custom molding, annealing, slumping, sawing, grinding, CNC machining, generating, edging, cutting and machining. Products include optical and filter glass, fused quartz, fused silica, industrial glass and exotic materials. Prototype to production quantities available. Distributor of GFE's High Index Coating Materials. Contact: Henry Louis, Sales Manager, hank@advancedglass.net; Tony Marino, President, tm@advancedglass.net.

### Angstrom Precision Optics Inc.

#307

APOMA

190 Bennington Dr, Rochester, NY, 14616  
+1 585 663 7230; fax +1 585 663 7236  
info@apoptics.com;

**Featured Product: Precision polished germanium & silicon windows.**

Manufacturer of plano components. Windows, wedges, filters, mirrors and post fabrication of coated optics. UV, VIS and IR materials. Capabilities: CP, DSP and OD polishing to <0.5 arc sec wedge, <10-5 SD and 1/20 wave flatness. CNC dicing. Materials include optical glass, fused quartz/silica, filter glass, silicon, germanium, Borofloat and float glass. APO provides quality optics with our expedited 2-3 day delivery. Contact: Ron Schulmerich, President, ron@apoptics.com.

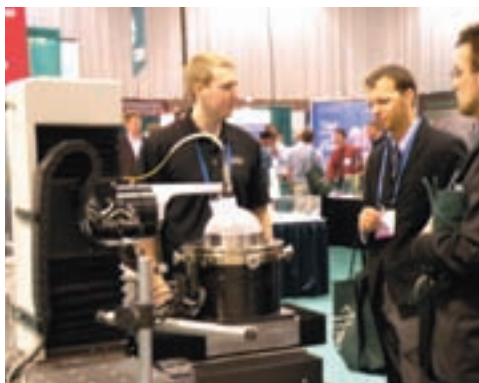
### APPLIED IMAGE, Inc.

#501

SPIE Corporate Member

1653 E Main St, Rochester, NY, 14609  
+1 585 482 0300; fax +1 585 288 5989  
info@appliedimage.com; www.appliedimage.com





## Applied Surface Technologies #1336

15 Hawthorne Dr, New Providence, NJ 07974  
+1 908 464 6675; fax +1 908 464 4765  
roberts@co2clean.com; www.co2clean.com

### Featured Product: CO<sub>2</sub> Snow Jet.

We will demonstrate the CO<sub>2</sub> Snow Jet – a simple, yet novel surface cleaning process that can remove particles of all sizes (visible down to 0.03 microns) and also organic residues. Bring your samples for a demonstration. The CO<sub>2</sub> snow cleaning process works well for many wafers, ceramics, metals, substrates, optics – both coated and uncoated, analytical samples (AFM, etc), diamond turned optics and many other applications. The Snow Jet process is solvent-free, nondestructive and residue-free. Contact: Robert Sherman, President, roberts@co2clean.com.

## Boldt Machinery, Inc. #112

4803 Pittsburgh Ave, Erie, PA 16509  
+1 585 721 8665  
timp@boldtmachinery.com; http://www.boldtmachinery.com/

## Bullen Inc. #201

1301 Miller Williams Rd, Eaton, OH, 45320  
+1 937 456 7133  
sales@bullentech.com; www.bullentech.com

Precision machining of hard, brittle materials including glass, quartz, sapphire, alumina, silicon carbide and other technical ceramics. Ultrasonic machining, Microabrasive Jet Machining and CNC machining. Structured wafers for MEMS pressure sensor and microfluidic applications. Single and double side polished borosilicate wafers. Prototype thru production. Advanced metrology capabilities. ISO 9001:2008. Contact: Thomas A. Fote, Sales Manager, tfote@bullentech.com; Jim Vidic, Sales Engineer, jvidic@bullentech.com.

## Chardon Tool #406

115 Parker Ct, Chardon, OH, 44024  
+1 440 286 6440; fax +1 440 286 7165  
info@chardontool.com; www.chardontool.com

### Featured Product: Ultra-Precision Diamond Tools.

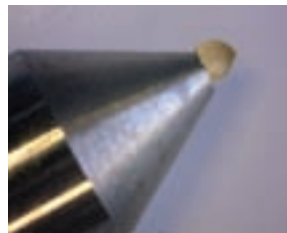
One of the world's largest manufacturers of ultra-precision diamond tools used to machine optical parts. Single-crystal synthetic and natural diamonds with low waviness radius surface for turning, fly-cutting, boring all diamond machinable materials. In addition, we offer the most accurate SCD tipped end mills used to machine micro-lens arrays, optical molds, microfluidics and free-form surfaces. Chardon Tool also supplies repair and relap services for all styles and makes of diamond tools. Contact: Hugh McAllister, Sales Engineer, hmcallister@chardontool.com; Mike Hunter, VP of Business Development, mhunter@chardontool.com.

## Contour Fine Tooling #706

143 Jaffrey Rd, Marlborough, NH, 03455  
+1 603 876 4908; fax +1 603 876 4911  
dennis@contour-diamonds.us; www.contour-diamonds.com

### Featured Product: Ultra-precision diamond micro-mills with guaranteed 2 micron runout to the shank.

Contour Fine Tooling supplies Natural and Synthetic single crystal diamond tools for 2-axis and Freeform, (SSS, FTS & micro-milling) technologies for manufacturing I/R, transmissive and reflective optics for Aero-Space/Defense, Consumer electro-optics and Ultra-precision mechanical components. Along with our sister company Technodiamant we have 6 global manufacturing locations. Diamond tools can be supplied with edge waviness down to 50 nm P-V and 1 micron tip radius. Contact: Dennis Keating, VP Sales and Marketing, dennis@contour-diamonds.us; Jeff Tomlin, VP and General Manager, jeff@contour-diamonds.us.



*Contour Ultra-precision micro-mill have a guaranteed runout of 2 micron or less.*

# Exhibitor Listing

## Corning Incorporated

#506

SPIE Corporate APOMA

1 Riverfront Plz, Corning, NY, 14831  
+1 607 974 9000  
www.corning.com

### Featured Product: Tropel FlatMaster MSP 300 Wafer Analysis System.

Corning Incorporated is a world leader in glass and materials science. Our Advanced Optics business specializes in designing and manufacturing precision optical solutions for use from the deep ultraviolet through the infrared. Target markets include aerospace and defense, semiconductor, display and optical data storage. In addition Corning manufactures a line of optical-based metrology instruments for in-process inspection of precision electronic and mechanical substrates and components. Contact: David Jenne, jennedc@corning.com; Linda Dworaczyk, dworaczylm@corning.com.

## Cranfield UPS<sup>2</sup> #1008

Cranfield University, Cranfield, Bedfordshire, United Kingdom, MK34 0AL  
+44 1234 2994  
p.comley@cranfield.ac.uk; www.cranfield.ac.uk

### Featured Product: Large Optics and Structure Surfaces Manufacture.

The precision engineering centre specialises in the design and production of novel ultraprecision machine tools and state of the art processes. The centre operates both a large optics manufacturing facility with the capability to produce metre scale freeform surfaces, and a diamond machining facility for the production of structured surfaces. Contact: Dr Paul Comley, Senior Research Fellow, p.comley@cranfield.ac.uk; Prof Paul Shore, Head of Precision Engineering Centre, Paul.Shore@cranfield.ac.uk.

## DAC International, Inc.

#702

6390 Rose Ln, Carpinteria, CA, 93013  
+1 805 684 8307; fax +1 805 566 2196  
lsilbert@dac-intl.com; www.dac-intl.com

### Featured Product: Features of the ultra-precision ALM & Opteq diamond turning lathes & ALM Mill will be demonstrated.

DAC International manufactures high precision CNC Lathes and Mills for machining plastics and non-ferrous materials. We have several standard platforms that can be customized for a variety of applications. The DAC ultra-precision lathes are used for single-point diamond turning of optics and all plastics and polymers. DAC equipment is designed and manufactured in the USA, backed by experienced, worldwide technical support. Contact: Chip Heavican, Executive Vice President, cheavican@dac-intl.com; Chris Pantle, Sales Manager, cpantle@dac-intl.com.

## Davidson Optronics, Inc.

#807

2223 W San Bernardino Rd, West Covina, CA, 90815  
+1 626 962 5181; fax +1 626 962 5188  
sales@davidsonoptronics.com; www.davidsonoptronics.com

## DCM Tech, Inc.

#803

4455 Theurer Blvd, Winona, MN, 55987  
+1 507 452 4043; fax +1 507 452 7970  
interest@dcm-tech.com; www.dcm-tech.com

### Featured Product: IG 140 SD is a precision blanchard style grinder for glass and crystal fabrication applications.

DCM Tech is a U.S. machine tool builder located in Winona, MN. DCM's core competency lies in the design and manufacturing of vertical spindle rotary table surface grinders. DCM customers experience cost saving advantages over conventional surface grinding that bring short term payback and ongoing savings. Process determination and product installation are handled factory direct. Contact: Mike Anderson, Product Manager, interest@dcm-tech.com.

## Delta Optics Technologies Pte Ltd. #408

51 Ayer Rajah Crescent #02-15/16, Singapore, Singapore, 139948  
+65 6779 7976; fax +65 6779 2792  
kslee@deltaoptics.com; www.deltaoptics.com

### Featured Product: Diamond Direct-Cut Hardened Steel Inserts.

A Singapore company manufacture Hardened steel optical inserts (without the need of nickel plating) for plastic lens molding; mirrors & lens made



of soft materials; lens design and prototyping. Contact: Lee KamSung, Sales & Marketing Director, kslee@deltaoptics.com; Dr. Liu XiangDong, Technical Director, xdliau@deltaoptics.com.

*Free-Form Steel Optical Inserts  
Generated by Diamond-Direct-Cut-Steel Process.*

## Denton Vacuum, LLC

#116

1259 N Church St, Moorestown, NJ, 08057  
+1 856 439 9100; fax +1 856 439 9111  
info@dentonvacuum.com; www.dentonvacuum.com

### Featured Product: HDG-Horizontal Dual Gun IBS deposition and etch/ion milling processing system.

50+ year old provider of Thin Film Deposition Systems for R&D, Production Coating, Optical Films utilizing: PVD, IAD, IBS, PECVD, Thermal, Electron Beam & Systems using combination technologies. Contact: Jim Colbridge, Sales Manager, jcolbridge@dentonvacuum.com.

## Diacut, Inc.

#409

PO Box 217, Palmer Lake, CO, 80133  
+1 719 481 4205; fax +1 719 488 0872  
sales@diacut.com; www.diacut.com

Diacut is a customer-oriented manufacturer specializing in high precision diamond and CBN wheels. Our wheels are used for slot-grinding, slicing and dicing, grooving, and cut-off operations for glass, ceramics, quartz, sapphire, and ferrite. Our wheels are made to customer specifications and are used on high production machines such as, K&S, MTI, ITI, Disco, and standard surface grinders. Contact: Rene Furrer, Owner, sales@diacut.com; Toni Furrer, VP of Sales, sales@diacut.com.

**Diffraction International Ltd. #211**

5810 Baker Rd Ste 225, Minnetonka, MN, 55345  
 +1 952 945 9912; fax +1 952 400 8959  
 info@diffraction.com; www.diffraction.com

**Featured Product: Photoresists, EBR solvents, post CMP cleaners, and Targets.**

Diffraction International is the leader in supplying custom CGH diffractive null correctors for interferometric testing of cylinders and aspheres. We provide design, fabrication, certification and full documentation. Durango Interferometry Software brings phase shifting and static analysis to any interferometer. An intuitive graphical interface provides full control of analysis and complete access to raw data. Durango supports most hardware and imports several interferometry data formats. Contact: Steven M. Arnold, President, info@diffraction.com.

**Displays & Optical Technologies Inc. #302**

1105 Wonder St, Round Rock, TX 78681  
 +1 512 246 6400; fax +1 512 246 6060  
 jdeffenderfer@doti-optics.com; http://www.doti-optics.com

**dopa diamond tools #905**

Plauener Str 163-165, Berlin, Germany, 10353  
 +49 30 98318811; fax +49 30 98318817  
 info@dopa-diatools.com; www.dopa-diatools.com

**Featured Product: Development of diamond tools and production processes for optical and semiconductor industry.**

dopa deals with the development and production of diamond tools and whole production processes for the optical and semiconductor industry. The tools' main advantage is their very low subsurface damage combined with high stock removal rates. dopa offers with most different diamond tools, polishing slurries, polishing tools, lapping carriers, dressing tools, lubricants, etc. products that serve nearly the whole optical manufacturing process. We offer also a wide range of optical contract work. Contact: Marcel Patraschkov, R&D and Production, marcel@dopa-diatools.com; Mario Patraschkov, Sales, Mario@dopa-diatools.com.

**NEW YORK**  
*welcome to the state of applied photonics*

**OPTIFAB RECEPTION**  
 Tuesday, May 10, 5:00 pm

**Join the members of APOMA  
 and the Rochester Regional Photonics Cluster  
 for the Optifab Reception,  
 featuring Rochester's own...**

**Nik and the Nice Guys!**

**Tuesday, May 10  
 The Hyatt Ballroom  
 5:00 pm**

**APOMA**

**PHOTONICS  
 ROCHESTER**



# Exhibitor Listing

## Dyna Technologies, Inc.

#305

**SPIE** Corporate Member

1670 Tropic Park Dr, Sanford, FL, 32773  
+1 407 330 6423; fax +1 407 330 6121  
vendor@dti-fla.com; www.dti-fla.com

**Featured Product: The GP-1000HT is a compact press for high temperature molding of precision optical lenses.**

Dyna Technologies, Inc. (DTI) is a manufacturer of a precision glass molding press for production of optical elements such as aspheric lenses. The press features a fully enclosed design for vacuum and inert gas purging operation. Programmable feedback controls provide high precision position, force, heating and cooling profiles throughout the molding process. DTI also provides prototype and low volume services for optical elements and aspheric lenses. Contact: Howard Painter, President, hpainter@dti-fla.com; Brandon Dubas, Project Engineer, bdubas@dti-fla.com.

## Electro Optics Magazine

#1302

Europa Science, The Spectrum Building, The Michael Young Centre, Purbeck Rd, Cambridge, United Kingdom, CB2 8PD  
+44 1223 211170; fax +44 1223 211107  
sales.electro@europascience.com; www.electrooptics.com

**Featured Product: Electro Optics is now available worldwide as a digital edition, delivered via email on publication.**

Electro Optics magazine is Europe's leading title for photonics business, technology and applications. Packed with in-depth features, informed opinion and the latest news and products for the optics industry, it is an essential read for anyone involved in photonics. Subscription is free at [www.electrooptics.com/subscribe](http://www.electrooptics.com/subscribe), where you can also sign up for our two regular email newsletters, EONewsline and EOProductline. Contact: Jon Hunt, Advertising Sales Manager, [jon.hunt@europascience.com](mailto:jon.hunt@europascience.com); Warren Clark, Publishing Director, [warren.clark@europascience.com](mailto:warren.clark@europascience.com).

## Elma GmbH & Co. KG

#1010

Kolpingstr 1-7, Singen, Germany, 78224  
+49 7731 882 0; fax +49 7731 882 266  
[info@elma-ultrasonic.com](mailto:info@elma-ultrasonic.com); [www.elma-ultrasonic.com](http://www.elma-ultrasonic.com)

**Featured Product: Ultrasonic precision pre- and final cleaning systems for precision optics, laser and infrared optics.**

Highly specialized and yet innovative in multiple ways – this is Elma, a company which has successfully been on optical market with their ultrasonic technology for more than 60 years now. The product range contains water or solvent based process including hot air or IR drying system. Combined pre-cleaning and final cleaning system. Contact: Michael Schnauffer, Sales Manager for Optical Applications, [Michael.Schnauffer@elma-ultrasonic.com](mailto:Michael.Schnauffer@elma-ultrasonic.com); Claudia Piontek, Sales Assistance, [Claudia.Piontek@elma-ultrasonic.com](mailto:Claudia.Piontek@elma-ultrasonic.com).



*Ultrasonic cleaning systems for precision, laser and infrared optic production.*

## Engis Corporation

#113

105 W Hintz Rd, Wheeling, IL, 60090  
+1 847 808 9400; fax +1 847 808 9430  
[info@engis.com](mailto:info@engis.com); [www.engis.com](http://www.engis.com)

**Featured Product: Precision Lapping Systems for optical materials, particularly sapphire, calcium & magnesium fluoride.**

Engis Corporation is a global leader in the design and manufacture of complete lapping and polishing systems that offer the highest quality finished components, processed in the quickest cycle times, while keeping your manufacturing costs at a minimum. With 70+ years of experience in designing state-of-the-art lapping & polishing equipment, Engis engineers machines that elevate both precision and performance at a reduced cost per piece. Contact: Mike Pisauero, Project Manager, Advanced Materials, [mpisauero@engis.com](mailto:mpisauero@engis.com).

## Epner Technology, Inc.

#1338

**SPIE** Corporate Member

78 Kingsland Ave, Brooklyn, NY, 11222  
+1 718 782 5948; fax +1 718 963 2930  
[info@epner.com](mailto:info@epner.com); [www.epner.com](http://www.epner.com)

comprehensive array of electroplating, coating and optical fabrication technologies - NIST infrared standard, proprietary Laser Gold® and "light swallowing" Laser Black® processes; electroformed cold shields, custom-designed light waveguides, laser pump cavity reflectors and thermal barrier foil - serving laser, optics and photonics, semi-conductor, automobile, medical, aerospace and military markets. Contact: David Epner, President, [Info@epner.com](mailto:Info@epner.com); Paul J. Brancato, V.P. & General Manager, [Info@epner.com](mailto:Info@epner.com).

## ESDI

#1000

**SPIE** Corporate Member **APOMA**

310 S Williams Blvd Ste 210, Tucson, AZ 85711  
+1 520 296 3068  
[sales@engsynthesis.com](mailto:sales@engsynthesis.com); [www.engsynthesis.com](http://www.engsynthesis.com)

**Featured Product: IntelliWave™ Interferometric Analysis Software & Fizeau Interferometers.**

ESDI is a globally recognized leader in providing innovative surface & wavefront metrology solutions for astronomical, aerospace, bio-medical, optical fabrication, data storage & production metrology applications. ESDI products include Fizeau, Shearing, Point-Diffraction, sub-Nyquist and "Real Time" vibration insensitive Interferometers; the world-renowned IntelliWave™ software; Interferometer Accessories & Upgrades; and Custom Metrology Solutions. Contact: Don Pearson, Director, Sales and Marketing, [don.p@engsynthesis.com](mailto:don.p@engsynthesis.com).

## Evaporated Metal Films Corp.

#1326

239 Cherry St, Ithaca, NY, 14850  
+1 607 272 3320; fax +1 607 272 3369  
[info@emf-corp.com](mailto:info@emf-corp.com); [www.emf-corp.com](http://www.emf-corp.com)

Since 1936, EMF has provided a wide range of optical thin-film coatings. Core capabilities include mirrors, anti-reflective coatings, beam splitters, neutral-density filters and industry leading Rhodium dental mirrors. Additional products include gold, copper and aluminum slides. EMF provides program management for custom coating services and large



optics, up to 2.5 meters. ITAR and FDA registered. Contact: Joe Howe, Sales Manager, [joe@emf-corp.com](mailto:joe@emf-corp.com); Gary German, VP Sales and Marketing, [gary@emf-corp.com](mailto:gary@emf-corp.com).

*Ultima Ag99 optimizes blue, maintaining silver reflectance into the NIR.*

**Ferrotec (USA) Corp.**

#111

33 Constitution Dr, Bedford, NH, 03110  
+1 603 472 6402; fax +1 603 472 2320  
jdeichler@ferrotec.com; www.ferrotec.com

Ferrotec's thermoelectric modules offer precise temperature control of optical components including LEDs, photodiodes, CCDs, laser diodes, sensors and detectors. They are low powered and maintenance-free and operate over a wide range of temperature and environmental conditions.

**Ferson Technologies, Inc.**

#103

5801 Gulf Tech Dr, Ocean Springs, MS 39564-8225  
+1 228 875 8146; fax +1 228 875 5947  
cspence@ferson.com; http://www.ferson.com

**fineoptix GmbH**

#906

Schmalheck 18, Hüttenberg, Germany, 35625  
+49 6441 2104910; fax +49 6441 2104911  
info@fineoptix.com; www.fineoptix.com

fineoptix is a highly flexible manufacturer of custom made optical components in short lead times. Equipped with modern CNC manufacturing equipment and top class metrology, reliable achievement of quality and lead time is guaranteed. SSI Stitching Interferometrie and MRF Finishing System allows manufacturing of high qualities and extreme geometries up to diameter 280mm in small, mid size and higher volumes. fineoptix also offers full component manufacturing or SSI/MRF finishing service only. Contact: Miriam Eisner, Administration, m.eisner@fineoptix.com; Peter Flug, CEO, info@fineoptix.com.

**FLIR Systems**

#301

**SPIE** Corporate

27700 Parkway Ave, Wilsonville, OR, 97070  
+1 503 498 3303; fax +1 503 498 3551  
kip.nix@flir.com; www.flir.com/gs

**Featured Product: Optics fabrication, thin-film design and deposition, edge metallization, reticles, Scratch/Dig.**

FLIR Precision Optics designs & manufactures optical components and assemblies. Capabilities include; optics fabrication, thin-film design and deposition, edge metallization, reticles and patterned optics, and Surface Quality inspection standards. FLIR dielectric and metal films covering 180nm – 25µm enable a wide variety of components including; antireflection (AR), bandpass and bandstop filters, dichroics, dark mirrors, and high-durability diamond-like-Carbon (DLC) coatings. Contact: Kip Nix, Business Development Manager, kip.nix@flir.com; Garth Eliason, Program Manager, garth.eliason@flir.com.

**Fraunhofer Institute for Production Technology IPT**

#804

Steinbachstr 17, Aachen, Germany, 52074  
+49 241 8904 0; fax +49 241 8904 198  
info@ipt.fraunhofer.de; www.ipt.fraunhofer.de

**Featured Product: Ultrasonic tooling system for direct diamond machining of hardened steel.**

The Fraunhofer IPT combines knowledge and experience in all fields of production technology. The department of Fine machining and optics develops technologies for the production and processing of high-precision components including glass lenses, replication tools and components for the semi-conductor industry. We transform basic understanding into industrial practice with the use of the latest machines and software

solutions. Contact: Benjamin Bulla, Engineer, benjamin.bulla@ipt.fraunhofer.de; Olaf Dambon, Chief Engineer, olaf.dambon@ipt.fraunhofer.de.



*Ultrasonic tooling system for ultra precision diamond machining of hardened steel.*

**Fresnel Optics GmbH**

#1346

**APOMA**

Flurstedter Marktweg 13, Apolda, Germany, 99510  
+49 3644 5011 0; fax +49 3644 5011 50  
sales@fresnel-optics.de; www.fresnel-optics.de

Fresnel Optics GmbH is the European member of the Reflexite Energy Solution division. Based on the complete chain of optical design, tool fabrication, precision polymer replication and custom finishing, we offer custom fabrication of plastic micro- and nanostructured optical components. Our components are used in the markets Display, Lighting, Solar, Optical Measurement, Machine Vision and Optical Sensors. We are certified according to DIN ISO 9001. Contact: Dr. Hans Lauth, Division Manager OSB, hans.lauth@fresnel-optics.de; Ina Zeidler, Sales Manager OSB, ina.zeidler@fresnel-optics.de.

**Glass Fab Inc.**

#705

**SPIE** Corporate **APOMA**

257 Ormond St, Rochester, NY, 14605  
+1 585 262 4000; fax +1 585 454 4305  
info@glassfab.com; www.glassfab.com

Manufacturer of custom blanks. Products include fused quartz, fused silica, optical glasses, filter glasses, and low/ultralow expansion glasses. Capabilities included annealing, slumping, sawing, grinding, edging, drilling, water jet cutting, CNC shaping and CNC generating. Contact: Daniel Saltzman, President, d\_saltzman@glassfab.com; Wayne Leon, General Manager, w\_leon@glassfab.com.

**Get the training you need to stay ahead of the technology curve**

See course listing on daily event schedule, p. 3.

# Exhibitor Listing

## G-S PLASTIC OPTICS

#800

SPIE Corporate Member **APOMA**

408 St Paul St, Rochester, NY, 14605  
+1 585 295 0200; fax +1 585 232 2314  
info@gsoptics.com; www.gsoptics.com

**Featured Product: G-S PLASTIC OPTICS is the world's leading supplier of custom designed polymer optics.**

G-S PLASTIC OPTICS manufactures precision polymer optics for imaging, scanning, detection, and illumination applications worldwide. In addition to an extensive catalog offering of precision polymer optics, the company has in-house capability to provide custom designed diamond turned and injection molded prototypes, production injection molding of optics, thin film and reflective coatings, and integrated optical solutions for a wide range of military, medical, commercial, and consumer markets. Contact: Will Beich, Director of New Business Development, wbeich@gsoptics.com.

## Hach Company

#1342

5600 Lindberg Dr, Loveland, CO, 80539  
+1 541 472 6508  
dledwick@hach.com; www.hach.com/hua

**Featured Product: MET ONE 3400 Series – Portable Particle Counter – www.hach.com/METONE.**

MET ONE, the leading clean room contamination monitoring instrument brand offers the life sciences market the most advanced airborne particle counters. The Met One 3400 series portable particle counters uniquely offers customers a sampling plan wizard to organize their clean room, proactive compliance to ISO14644 and paperless data transfer solutions.

Contact: Donna Ledwick, Inside Sales Coordinator, DLedwick@hach.com; Paul Johnstone, Inside Sales Representative, PJohnstone@hach.com.

*MET ONE 3400 paperless cleanroom compliance! Speeds up cleanroom validation! www.hach.com/HUA*



GENERAL REFRESHMENT SPONSOR

## Heraeus Quartz America LLC

#609

SPIE Corporate Member

100 Heraeus Blvd, Buford, GA, 30518  
+1 678 714 4350; fax +1 678 714 4355  
sales.hqa-optics@heraeus.com; www.heraeus.com

**Featured Product: Spectrosil synthetic fused silica for deep UV applications. TSC-3 plate material.**

Heraeus is a leader in the manufacturing of high purity quartz materials and components, and produces various types of high purity fused silica for use in semiconductor manufacturing, telecommunications, optical, chemical, lamps and a variety of other advanced applications. Contact: Robert Sawyer, Account Representative, Robert.sawyer@heraeus.com; Michele Follmar, Quartz Customer Service/Sales, Michele.follmar@heraeus.com.

## Hinds Instruments, Inc.

#607

SPIE Corporate Member

7245 NW Evergreen Pkwy Ste 150, Hillsboro, OR, 97124  
+1 503 690 2000; fax +1 503 690 3000  
sales@hindsinstruments.com; www.hindsinstruments.com

**Featured Product: Exicor OIA - Stress Birefringence measurement system for lenses.**

Hinds Instruments is a world leader in polarization instrumentation and components. We manufacture Photo Elastic Modulators (PEMs), Birefringence measurement systems, Mueller and Stokes Polarimeters, Lock-in Amplifiers, Detectors and a wide variety of optical components and systems. We specialize in adapting our technology to our customers needs, focusing on Birefringence and Mueller Matrix evaluation of optics (including lenses) and assisting in the implementation of PEMs in OEM products.



*Exicor OIA - Stress Birefringence measurement system for lenses.*

## Hoya Corporation USA - Optics Division

#106

SPIE Corporate Member

3285 Scott Blvd, Santa Clara, CA, 95054  
+1 408 654 2200; fax +1 408 654 2270  
opticsales@hoyausa.com; www.hoyaoptics.com

**Featured Product: Filter Glass & Optical Glass in various forms - including block glass.**

HOYA CORPORATION USA Optics Division is a leading supplier of filter glasses, optical glasses, specialty glasses and components for fabricators, scientific, technology and industrial companies throughout the US. Contact: Lynn Brown, Division Manager, Lbrown@hoyaoptics.com; Sushama Apte, Sales Engineer, sushama@hoyausa.com.

## II-VI Infrared

#707

APOMA

375 Saxonburg Blvd, Saxonburg, PA, 16056  
+1 724 352 1504; fax +1 724 352 4980  
info@iiviiinfrared.com; www.iiviiinfrared.com

II-VI INFRARED, the #1 optics foundry to CO<sub>2</sub> laser OEMs worldwide, offers a complete line of CO<sub>2</sub> laser optics, including lenses, mirrors, beam expanders and condensers, resonator optics, band-selective optics, and more. We also offer optics for 1 micron lasers, including lenses, mirrors, and diamond-turned zinc sulfide MultiSpectral beam integrators. Contact: Tom Neff, tneff@ii-vi.com.

## INFICON #116

Two Technology Pl, East Syracuse, NY, 13057-9714  
+1 315 434 1100; fax +1 315 437 3803  
reachus@inficon.com; www.inficon.com

**Featured Product: New IC6 Thin Film Deposition Controller for Precision optics, codeposition, crystal averaging.**

Provides world class Vacuum Instrumentation/Gauging, thin film deposition controllers and sensors, quartz crystals, RGAs, leak detectors, endpoint control, dosing valves, general valves & fittings. Contact: Steve Tiso, Dir Intl Sales, steven.tiso@inficon.com; Brad Hanford, Rep, brad.hanford@aotavac.com.



## International Business Council of Greater Rochester NY #704

100 Chestnut St Ste 1910, Rochester, NY, 14604  
+1 585 530 6200

laurie@IBCRochester.com; www.RochesterBiz.com/IBC

The International Business Council of Greater Rochester NY (IBC) is a collaborative association established to promote global trade opportunities. The IBC is a not-for profit organization that provides trade seminars, networking and on-site training in areas such as EAR/ITAR compliance, logistics and finance to enhance international trade practices of the companies in region.

## Intlvac #805

247 Armstrong Ave Unit 6, Georgetown, ON, Canada, L7G 4X6  
+1 905 873 0166; fax +1 905 873 0168  
amanda@intlvac.com; www.intlvac.com

Systems for optical thin film deposition by Reactive Sputtering, Plasma Assisted Chemical Vapor Deposition, and Ion Assisted electron beam evaporation. Coatings are also offered for evaluation and in engineering quantities such as: Band pass and edge filters, dielectric and dichroic, cold, & hot mirrors, broadband & ultra-broadband AR, bare & protected metal coatings such as Gold, Platinum, Silver, Aluminum, transparent conductive films, and Diamond Like Carbon. Contact: Greg Dawn, Sales, gdawn@intlvac.com.

## IOP Publishing Ltd. #204

Dirac House, Temple Back, Bristol, United Kingdom, BS1 6BE  
+44 1179 297481; fax +44 1179 301178  
custserv@iop.org; www.iop.org

IOP Publishing is a world leader in scientific publishing and the electronic dissemination of physics. Our portfolio includes journals, magazines and websites across many scientific, technical & medical disciplines. Physics World is the membership magazine of the Institute of Physics, one of the largest physical societies in the world. The magazine enjoys an equal split between the academic and corporate/industrial communities Contact: Fiona Walker, Exhibitions Manager, fiona.walker@iop.org; Edward Jost, Group Advertising Manager, edward.jost@iop.org.

## IRD Glass #300

**SPIE Corporate Member**

810 E St Paul St, Litchfield, MN, 55355  
+1 320 693 7217; fax +1 320 693 7216  
ird@irdglass.com; www.irdglass.com

**Featured Product: Our new 3-axis Omax waterjet allows us to significantly reduce machine time on complex geometries.**

IRD Glass specializes in manufacturing custom precision components from glass, ceramic, Spinel, stainless steel or other composites. IRD manufactures precision tubes, spacers and pedestals for the sensor, transducer and defense industry. Precision laser mirrors and reflectors are another specialty of IRD. Using Zygo laser Interferometers guarantees that critical flatness and roll off specs are met. IRD's proprietary polishing process gives you precision components at catalog pricing. Contact: Dave Thomas, Sales, dave@irdglass.com; Todd Anderson, VP Sales and Marketing, todd@irdglass.com.

## Isuzu Glass Inc. #402

**SPIE Corporate Member**

23505 Crenshaw Blvd Ste 130, Torrance, CA, 90505  
+1 310 517 1866; fax +1 310 517 1869  
sales@isuzuglass.com; www.isuzuglass.com

**Featured Product: Moldable UV transmitting filter glass.**

Manufacturer of molded glass optical components and optical filter glass. Optical components include lenses, lens arrays, flyeye Lenses, CPC's, CPV secondary concentrators, rod lenses, aspheric lenses. Filter glasses include heat/IR absorbing, laser safety, cut on and cut off, contrast enhancing, color correction, UV transmitting, IR transmitting. Contact: Mike Preston, Sales Manager, sales@isuzuglass.com; Hiro Yokoi, Vice President, sales@isuzuglass.com.

**WIFI SPONSOR**

## JENOPTIK Optical Systems, Inc. #700

**SPIE Corporate Member APOMA**

16490 Innovation Dr, Jupiter, FL, 33478-6428  
+1 561 881 7400; fax +1 561 881 1947  
sales@jenoptik-inc.com; http://jenoptik-inc.com

**New Product: Diamond turning capabilities extended to Jenoptik's Jupiter, FL facility.**

JENOPTIK Optical Systems, Inc. delivers a unique range of custom solutions with expertise ranging from precision assemblies and components, from waferscale microoptics to large aspheres and in materials ranging from glasses, to crystals and polymers. Fab competencies include optical polishing, diamond turning and lithographic etching for applications covering DUV to LWIR. We combine optical design and engineering with high quality volume manufacture at US manufacturing locations along with Global sites in Germany and Israel.



*Custom, Diamond turned, polished infrared optics.*

## JML Optical Industries Inc. #1318

820 Linden Ave, Rochester, NY, 14625  
+1 585 248 8900; fax +1 585 248 8924  
jml@jmloptical.com; www.jmloptical.com

**Featured Product: Multi-element optical systems from design to high volume production.**

JML designs, manufactures and coats precision optical components and multi-element systems for applications such as: biomedical, defense, security, aircraft, robotic vision, machine vision, scanning and many other commercial OEM applications. Custom made low and high volume quantities as well as prototype and off the shelf stock optics are available. Visit our website at www.jmloptical.com. Contact: Marty Roberts, Director of Sales, marty@jmloptical.com; Gregg Sadwick, COO, Greggs@jmloptical.com.

## Kreischer Optics, Ltd. #212

**APOMA**

1729 Oak Dr, McHenry, IL, 60050  
+1 815 344 4220; fax +1 815 344 4221  
optics@kreischer.com; www.kreischer.com

**Featured Product: Kreischer Optics offers a full line of transmission spheres for 4" aperture Fizeau interferometers.**

Established in 1948, Kreischer Optics continues to lead the industry in the manufacture of custom glass lenses combining the skill of master opticians, CNC manufacturing and state-of-the-art metrology to meet your needs in aspheres, spheres, cylinders, flats, and now a complete line of transmission spheres for 4" aperture Fizeau interferometers. See our website at Kreischer.com. Contact: Cody Kreischer, CEO, Cody@Kreischer.com; Debbie Trexler, Office Manager, Debbie@Kreischer.com.

# Exhibitor Listing

## Kugler of America LTD

#605

SPIE Corporate Member

48 South Rd Unit I, Somers, CT, 06071  
+1 860 749 6400; fax +1 860 749 6600  
info@kuglerofamerica.com; www.kuglerofamerica.com

**Featured Product: MicroMaster, Hydrostatic 5 axis micro freeform machining system with 250nm accuracy.**

We are a leading manufacturer of ultra-precision Machining Systems for Optical Surfaces, Optical 3D Structured Surfaces, Waver-thinning,



and Micromachining applications: Fly-cutters, Drum-Turning machines, Micromachining Systems, Custom Metal Mirrors, Laser Beam Delivery Systems and Laser Mirrors. Contact: Meinrad Schirmeister, General Manager, meinrad.schirmeister@kugler-precision.com.

*Hydrostatic 5 axis Freeform Laser & Mechanical micro machining system.*

## LaCroix Optical Co.

#611

SPIE Corporate Member APOMA

PO Box 2556, Batesville, AR, 72503  
+1 870 698 1881; fax +1 870 698 1880  
karen@lacroixoptical.com; www.lacroixoptical.com

**Featured Product: Manufacturer of Precision Custom Optics.**

Since 1947, our passion for world-class craftsmanship and customer service, has positioned our company as the premier domestic manufacturer of custom precision optics in the United States. LaCroix Optical Co. is ISO 9001:2008 certified as well as ITAR registered. Please visit our website at www.lacroixoptical.com. Contact: Tom Cox, Manufacturing Engineer, tom@lacroixoptical.com; David Cossey, Manufacturing Engineer, david@lacroixoptical.com.

## Lambda Research Corp.

#806

SPIE Corporate Member

25 Porter Rd, Littleton, MA 01460-1434  
+1 978 486 0766; fax +1 978 486 0755  
sales@lambdare.com; http://www.lambdare.com

**Featured Product: TracePro, OSLO, TracePro Bridge, ScatterScope, CASI, Opsira metrology line**

Lambda Research Corporation is a single source solution for optical and illumination design software and hardware. Lambda sells TracePro®, 3D opto-mechanical software differentiated by its ease-of-use, CAD interface and accuracy for illumination design, the TracePro Bridge™, our add-in for Solidworks and OSLO for optical design. Lambda also distributes the ScatterScope3D™ scatterometer, Schmitt CASI®, and the Opsira line of metrology systems for both display and LED measurement.

**GENERAL REFRESHMENT SPONSOR**

## Larsen Equipment Design, Inc.

#702

APOMA

1117 NW 52nd St, Seattle, WA, 98107  
+1 206 789 5121; fax +1 206 789 7756  
pam@larsenequipment.com;

Larsen Equipment Design is your USA manufacturer of precision optical equipment for micro, miniature and now 4" lenses. Since 1981 we have been recognized as the source for your optics manufacturing needs. Our polishers are made with sturdy stainless steel cases and have sealed spindles for worry free operation. Have tooling requirements? Our engineering department can help. Turn to us as your precision optics manufacturing resource. Contact: Erik A. Larsen, President, erik@larsenequipment.com; Billy Hooper, Production Coordinator, billy@larsenequipment.com.

**PROMOTIONAL PARTNER**

## Laser Focus World #1310

SPIE Corporate Member

98 Spit Brook Rd, Nashua, NH, 03062  
+1 603 891 0123; fax +1 603 891 0574

## Leybold Optics

#909

SPIE Corporate Member

539 James Jackson Ave, Cary, NC, 27540  
+1 919 657 7100; fax +1 919 657 7101  
www.leyboldoptics.com

**Featured Product: Direct optical monitoring on a SYRUSpro box coater with double rotation planet.**

Leybold Optics is a standard-setting, technologically innovative company in the business of vacuum coating systems used for coatings from the deep ultraviolet to the far infrared. The SYRUSpro is a high productivity electron beam gun coating tool with ion plasma assisted deposition for production of dense and shift free optical coatings. The HELIOS system is based on reactive magnetron sputtering and includes an in situ optical monitoring system. Contact: Tobias Haecker, Regional Sales Manager, tobias.haecker@leyboldoptics.com.

## Loadpoint Bearings UK Ltd.

#604

67 Haviland Rd, Ferndown Industrial Estate, Wimborne Dorset, United Kingdom, BH21 7PY

+44 1202 894447; fax +44 1202 871641  
all@loadpoint-bearings.co.uk; www.loadpoint-bearings.co.uk

**Featured Product: Air Bearing machining spindles, for diamond turning and grinding machines.**

100% UK based manufacture of all spindles, for 30 years. Around 3000 spindles per annum manufactured for optical, semiconductor and automotive markets. Contact: Jon Parkes, Sales Director, jon.parkes@loadpoint-bearings.co.uk; David Gilham, Director, david.gilham@loadpoint-bearings.co.uk.



*Loadpoint Air Bearings, precise rotary spindles for machine tools.*

## Luphos GmbH

#911

Weberstr 21, Mainz, Germany, 55130  
+49 6131 24059 0; fax 49 6131 24059 66  
info@luphos.com; www.luphos.com

**Featured Product: LuphoScan - Fast and contactless 3D metrology platform for spheric and aspheric optics.**

Luphos GmbH is a young and innovative German company specialized in high precision, contactless distance and topology measurement. The Luphos products feature the worldwide unique Multiwavelength Interferometry (MWLI®) that enables flexible and easy measurements of distances with a sub-nanometer resolution in a large working range. Knowing about the high precision demands in optics, the Luphos team always follows the mission statement "light matters". Contact: Dr. Gernot Berger, Product Executive/Sales Manager, berger@luphos.de; Dr. Juergen Petter, Chief Executive Officer, petter@luphos.de.

## Lytkarino Optical Glass Factory

#304

1 Parkovaya str, Lytkarino, 140080, Russia  
+7 495 552 32 95; fax +7 495 552 1790  
office@lzos.ru; www.lzos.com

## Magnus Precision Manufacturing, Inc. #114

1912 Rte. 96, Phelps, NY, 14532  
+1 315 548 8032; fax +1 315 548 8041  
dmiller@magnuscnc.com; <http://www.magnuscnc.com/>

**Featured Product: Manufacturer of ultra precision machined components used in the optical/medical industries.**

Magnus Precision Mfg., Inc., located just outside of Rochester, NY's optical corridor, has been a long-standing leader in providing the most accurate and complex machined components to product manufacturers worldwide. With Magnus' 80-employee-owners, many of the machines utilized include features such as .000010" resolution, spindles within .000025" TIR and built-in axis glass scales for the best of positioning and repeatability. Magnus is both ITAR registered and ISO 9001-2008 certified. Contact: Donald D. Miller, Director of Business Development, dmiller@magnuscnc.com.

## Makino Die Mold Technologies #309

2600 Superior Ct, Auburn Hills, MI, 48326-4313  
+1 248 232 6200  
<http://www.makino.com>

## Metrology Concepts LLC #1324

**SPIE** **APOMA**

3495 Winton Pl Ste Bldg E-120, Rochester, NY, 14620  
+1 585 427 9155; fax +1 585 427 9026  
info@metrologyconcepts.com; [www.metrologyconcepts.com](http://www.metrologyconcepts.com)

**Featured Product: Fast, accurate polychromatic lens testing; wavefront quality and axial color correction.**

Metrology Concepts specializes in surface and wavefront measurement solutions for defense, laser, ophthalmic, precision optics, and scientific markets. Our core technologies include phase shifting interferometry and Shack-Hartmann wavefront sensing. Working closely with our customers, we offer standard and custom instruments, upgrades to existing metrology, as well as training and measurement services. Contact: John Nemechek, JNemechek@MetrologyConcepts.com.

## Mildex, Inc. #708

**SPIE**

1388 Crittenden Rd, Rochester, NY, 14623-2308  
+1 585 473 6540; fax +1 585 475 1971  
mildex@eznet.net; [www.mildex.com](http://www.mildex.com)

**Featured Product: SPCM-M1-AT50 fully automatic Lens Centering and Beveling machine with loading & unloading robot.**

Also available for demonstration are Trioptics OptiSpheric/OptiCentric PC-controlled optical test and alignment workstation. This instrument provides traceable measurements of EFL, BFL, MTF and lens centration errors. We also will display Fogale Lenscan, Model LS200 which can measure lens thickness and air gaps of closed optical assemblies. Contact: Harvey Miller, President, info@mildex.com.



*Model SPCM-M1-AT50 fully automatic lens centering and beveling machine including automatic loading and unloading of work-pieces by robot.*

## Miraclean Ultrasonics #904

PO Box 100, 4743 Cramer Dr, Ashville, NY, 14710  
+1 716 763 4343; fax +1 716 763 3555  
soundwaves@miraclean.com; [www.miraclean.com](http://www.miraclean.com)

**Featured Product: SonicCell automated parts cleaning line featuring ultrasonics and a small footprint design.**

Miraclean® Ultrasonics designs and manufactures high performance, user-friendly precision cleaning systems. These include manual or automated ultrasonic parts cleaning lines, citric and nitric passivation lines, automated fpi lines, and automated titanium anodize lines. Miraclean® automation is programmed in house to meet user specifications and sets our systems apart. Contact: Dennis Myers, Sales Manager, dmyers@cmfs.com; Cheryl Larkin, Director of Marketing, cheryl.larkin@verizon.net.

## Moore Nanotechnology Systems LLC #608

**APOMA**

230 Old Homestead Hwy, Swanzey, NH, 03431  
+1 603 352 3030; fax +1 603 352 3363  
sales@nanotechsys.com; [www.nanotechsys.com](http://www.nanotechsys.com)

Nanotech® Ultra-Precision Machining Systems are available in various models with 2 to 5 axes of CNC motion control for single point diamond turning or deterministic microgrinding. All Nanotech machines utilize a programming resolution of 1.0 nanometer, and a system feedback resolution of only 0.034 nanometer. Our 10,000rpm heavy duty work holding spindle allows for high speed machining but is not limited by the same weight load restrictions as other high speed spindles. Contact: Bob Cassin, Sales Manager, cassin@nanotechsys.com; Jeff Perra, Sales Engineer, cassin@nanotechsys.com.

## MPF Systems #906

Schmalheck 18, Hüttenberg, Germany 35625  
+49 6441 2104910; fax +49 6441 2104911  
mpf@fineoptix.com; [www.mpf-systems.com](http://www.mpf-systems.com)

**Featured Product: VT750 and VT1200 vertical workshop interferometers. Easy to use, affordable and production oriented.**

MPF-Systems, a division of fineoptix GmbH in Germany produces high quality metrology systems for optics manufacturing companies. The product portfolio integrates sophisticated vertical workshop interferometers for production and quality control, a wide range of 4" and 6" transmission spheres, fringe analyzing software as well as tools for CT and diameter measurement. All products made in Germany, designed by optics manufacturers for optics manufacturers, affordable and production oriented. Contact: Lisa Carvalho, Sales MPF-Systems, mpf@fineoptix.com; Peter Flug, CEO, p.flug@fineoptix.com.

## NiCoForm, Inc. #105

72 Cascade Dr, Bldg 1 Level 2, Rochester, NY 14614-1109  
+1 585 454 5530  
jjachlewski@nicoform.com; <http://www.nicoform.com>



# Exhibitor Listing

## North American Coating Laboratories #709

9450 Pineneedle Dr, Mentor, OH, 44060  
+1 440 357 7000; fax +1 440 357 7001  
info@nacl.com; www.nacl.com

North American Coating Laboratories provides coatings for customers in the polymer & glass optic markets. Our experience in both dip and vacuum-applied processes make NACL one of the most respected organizations in the optical coatings field. Our coating competencies include Scratch-resistant, Reflective, Anti-reflective, Filter, Conductive, and ITO coatings, all of which are used in a wide-array of applications. North American Coating Laboratories is certified to ISO 9001:2008 standards. Contact: Dan Fiore, Business Development Manager, dfiore@nacl.com; Brian Wilson, President, bwilson@nacl.com.

## Ohara Corp. #1334

**SPIE Corporate Member** **APOMA**

50 Columbia Rd, Somerville, NJ, 08876  
+1 908 218 0100; fax +1 908 218 1685  
sales@oharacorp.com; www.oharacorp.com

**Featured Product: Optical quality zero expansion material is now available with Ohara ClearCeramZ.**

Ohara provides one-stop shopping for optical materials. Offerings include over 150 optical glasses, Fused Silica, CaF<sub>2</sub>, Ge, Silicon, Sapphire and a host of other IR/UV materials. Double-sided polishing and index of refraction measurement services are also available. Contact: Chris Ghio, Director of Sales, chrisghio@oharacorp.com.

## Olympus America Inc. #404

**SPIE Corporate Member**

3500 Corporate Pkwy, Center Velle, PA, 18034  
+1 484 896 5000; fax +1 484 896 7131  
industrial.info@olympus.com; www.olympusamerica.com

Olympus is a leader in industrial microscopy, with its recognized innovation, optical quality, customer support and training. Olympus industrial microscopes and metrology systems play a vital role in precision R&D, engineering and manufacturing applications in fields as diverse as the aerospace, automotive, electronics, materials science/metallurgy, medical device, photovoltaics, and semiconductor arenas. Contact: industrial.info@olympus.com.

## OpTIC #306

Ffordd William Morgan, St Asaph Business Park, St Asaph  
Denbighshire, United Kingdom, LL17 0JD  
+44 1745 535 100

john.oliver@optictchnium.com; www.opticinnovations.co.uk

**Featured Product: Design, development and prototyping precision optical and opto-mechanical components and systems.**

OpTIC is a UK based contract research and development organisation. Working with on site leading edge academia as well as our own dedicated scientists and engineers, we help you get technology to market faster - from concept design to product verification to prototyping/low volume builds. Our core competence is in micro-precision engineering: Precision polishing & lightweighting of large/complex surfaces; Micro-structured patterned master molds/drums; Opto-mechanical design. Contact: John Oliver, Sales Director, john.oliver@optictchnium.com; Phil Harris, CEO, phil.harris@optictchnium.com.

## Optical Perspectives Group, LLC #205

7011 E Calle Tolosa, Tucson, AZ, 85750-2532  
+1 520 529 2950  
reparks@optiper.com; www.optiper.com

**Featured Product: The MicroFinish Topographer (MFT) directly measures finish on both large and small optics.**



Optical Perspectives Group, LLC is a consulting firm specializing in the hardware aspects of optical assembly, testing and alignment. In support of these functions, OPG markets three products; the Point Source Microscope (PSM) used for the alignment of optics and optical systems, the MicroFinish Topographer (MFT) for measuring surface finish and the CaliBall, an artifact used for calibrating interferometer transmission spheres using the random ball test. Contact: Robert Parks, President, reparks@optiper.com.

*Measuring surface finish of a mirror with the MicroFinish Topographer.*

## Optical Research Associates see Synopsys, Inc. #403

**SPIE Corporate Member**

**GENERAL REFRESHMENT SPONSOR**

## Optics Technology, Inc. #510

**APOMA**

3800 Monroe Ave, Pittsford, NY, 14534  
+1 585 586 0950; fax +1 585 248 2371  
sales@opticstechnology.com; www.opticstechnology.com

Optics Technology, Inc. is designer and manufacturer of microscope objectives, fiber imaging eyepieces, laser collimators, endoscopes and other micro-imaging devices. Serving the medical, bio-medical, industrial and defense markets. Contact: Dominick Polizzi, Director of Sales & Marketing, sales@opticstechnology.com.

## Optikos Corp. #903

**SPIE Corporate Member**

107 Audubon Rd, Wakefield, MA, 01880  
+1 617 354 7557; fax +1 617 354 5946  
sales@optikos.com; www.optikos.com

**Featured Product: The LensCheck™ is an economical system for accurately quantifying imaging properties of lenses.**

Optikos Corporation is the world's largest manufacturer of equipment for the measurement of optical image quality and a leading provider of optical product development services. As the world leader in the field of MTF testing, Optikos offers complete solutions for both component and system level tests on imaging systems operating from the ultraviolet to the far infrared. Optikos' product line includes testing suites for measuring the performance of optical and electro-optical imaging systems. Contact: Roger Kirschner, Marketing Director, rkirschner@optikos.com; Jim Scott, Key Account Manager, jscott@optikos.com.

## Optimax Systems, Inc.

#505

SPIE Corporate Member **APOMA**

6367 Dean Pky, Ontario, NY, 14519  
+1 585 265 1066; fax +1 585 265 1033  
sales@optimaxsi.com; www.optimaxsi.com

Optimax is America's largest prototype optics manufacturer, with more than 100 opticians. Our innovative manufacturing enables rapid delivery of custom optical components. Optimax makes Aspheres, Cylinders, Spheres and Prisms to customer specifications. We excel in producing optics in small lot sizes with diameters up to 300mm. Utilizing deterministic CNC machine tools and in-house coating, Optimax can deliver precision optics in record time! Contact: Jamie Hutchins, Sales Engineer, jhutchins@optimaxsi.com; Rick Plympton, CEO, sales@optimaxsi.com.

## OptiPro Systems

#414

SPIE Corporate Member **APOMA**

6368 Dean Pky, Ontario, NY, 14519  
+1 585 265 0160; fax +1 585 265 9416  
lynda@optipro.com; www.optipro.com

**Featured Product: New PRO 80 Series: Grind, Hi-Speed Polish, UltraForm Finishing. Compact, powerful, cost effective!**

OptiPro Systems, located in Rochester, NY, has more than 25 years experience designing and manufacturing precision optical fabrication machines and metrology systems. A leader in the implementation of optical fabrication and metrology equipment, OptiPro develops cutting edge machines for complex optics with challenging surface and production requirements. Our team of engineers, technicians and scientists can turn your concepts into optimized production solutions. Contact: David Mohring, Director of Optical Products, dmohring@optipro.com; Mike Bechtold, President, mike@optipro.com.



*New PRO 80 Series: Grind, Hi-Speed Polish, UltraForm Finishing. Compact, powerful, cost effective!*

## Optiworks, Inc.

#310

SPIE Corporate Member

1-2-4 Azuchi-machi, Chuou-ku Osaka, Japan, 541-0052  
+81 6 6264 7310; fax +81 6 6264 7310  
sales@optiworks.jp; www.optiworks.jp

**Featured Product: Optical System Design, Aspherical Solution, Hybrid Aspherical lens, Metrology.**

OptiWorks is optics engineering firm aiming for optical system design, prototyping and production. Especially aspherical solution including manufacturing capability is one of superior area and has commercialized lots of product. OptiWorks is also organizing monthly forum on optics within Optics community in Osaka, Japan.

## Optix Co.

#810

65 Zahari Stoyanov St, Panagyurishte, Bulgaria, 4500  
+359 288 43621; fax +359 288 46324  
sales@primoptix.com; www.primoptix.com

**Featured Product: Aspheric production 9.0mm to 90.0mm. New coating capability for DLC coatings, and filter coatings.**

Optix Co. is a leading supplier of Optical Components, and Optical Systems. Covering the UV and IR wavelengths. Our engineers can work with you from design to production. Optix will manufacture the components and the complete optical system meeting the high standards for AQAP, NATO 2110, and ISO 9001. Contact: Janice Hunter, U.S. Sales



Manager, janice.hunter@primoptix.com; Stoyan Novakov, Sales Manager, sales@primoptix.com.

*Hot-Pressed Aspheric lenses and prisms up to 90mm in diameter.*

## OptoTech Optical Machinery

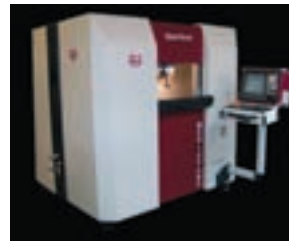
#915

**APOMA**

PO Box 131, East Greenville, PA, 18041  
+1 215 679 2091; fax +1 215 679 2013  
info@optotech.us;

**Featured Product: The MCG 100 CNC is OptoTech's newest & most compact 5-axis machine to provide ultimate flexibility.**

Designs, develops and manufactures machinery and new process technology for precision optics and ophthalmics. CNC and conventional high-speed generators/polishers (1 to 1000+mm), 5 axis processing centers, centering/edging, plano/prism, rod, cylinder and aspheric machines, interferometers, autocollimators and software. In-house tool design and manufacture. Consumables, parts, repairs and maintenance contracts. Contact: Mattias Pfaff, Business Unit Director Precision Optics, m.pfaff@optotech.de; Heidi Hofke, General Manager, info@optotech.us.



*The New Compact MCG 100 CNC 5-Axis Processing Center.*

**PROMOTIONAL PARTNER**

## The Optronics Co., Ltd.

#1348

Sanken Bldg, 5-5 Shin Ogawamachi, Shinjuku-ku Tokyo, Japan, 162-0814  
+81 3 3269 3550; fax +81 3 5229 7253  
intl@optronics.co.jp; www.optronics.co.jp

**Featured Product: LENS Design and Manufacturing EXPO 2012**

Organized by OPTRONICS Magazine in Japan, the Lens Expo was launched in April 2006 as an annual trade show covering the wide range of lens design and manufacturing technologies. Lens Expo 2012 is the best opportunity to find the most interested and motivated buyers and decision makers, who are eager to see the very latest products, technologies and services of lenses and lens design or manufacturing. Please stop by our booth for further information about the exhibition.

# Exhibitor Listing

## Oxford Instruments America #1306

300 Baker Ave Ste 150, Concord, MA, 01742-2124  
+1 978 369 9933; fax +1 978 369 8287  
plasma@oxinst.com; www.oxford-instruments.com

Oxford Instruments offers flexible, configurable process tools and leading-edge processes for the precise, controllable and repeatable etching, deposition and growth of micro- and nano-structures. Our systems provide process solutions for the micro- and nanometer engineering of materials for semiconductor, optoelectronics, HBLED, MEMS & microfluidics, high quality optical coating and many other applications in micro- and nanotechnology. Contact: Oxford Instruments Plasma Technology, plasma@oxinst.com.

## P.R. Hoffman Machine Products #401 APOMA

1517 Commerce Ave, Carlisle, PA, 17015  
+1 717 243 9900; fax +1 717 243 4542  
prhoff@prhoffman.com; www.prhoffman.com

**Featured Product: The PR Hoffman 5400 offers superior precision in a double-sided machine for a variety of substrates.**

PR Hoffman Machine Products has been a leader in double sided lapping and polishing equipment and supplies for the optics & laser, semiconductor, quartz, electronics, ceramics, and medical industries since 1938. Our broad range of machines from the PR-1 to the 5400 series offer flexibility in operation as well precision finish for thickness and flatness. The P.R. Hoffman models 1500, 1900, 3100, 5400, and the MARK IV are especially suited to thin and fragile substrates. Visit us at booth 401. Contact: Kerry Woods, Sales, kwoods@prhoffman.com; Rod Murray, Engineering Technician, Rmurray@prhoffman.com.



*5400 Servo RS Double-sided Lapping/Polishing Machine for Precision Optics.*

## PFG Precision Optics #400

SPIE CONGRESS APOMA

733 Bienville Blvd, Ocean Springs, MS, 39564  
+1 228 875 0165; fax +1 228 875 9354  
cody@pfgoptics.com; www.pfgoptics.com

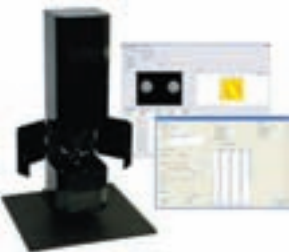
## PhaseView #511

7 rue de la Croix Martre, Palaiseau, France, 91120  
+33 1 69 32 12 78; fax +33 1 69 20 60 41  
contact@phaseview.com; www.phaseview.com

**Featured Product: WaveGauge: Optics Tester for Aspherics, Intraocular & Contact Lenses.**

PhaseView is a leading supplier of high end metrology instruments for optics characterization, 3D surface analysis and laser beam profiling.

Based on its proprietary high resolution wavefront sensors, PhaseView provides ultimate performance measurement systems for R&D laboratories and industrial quality control. Contact: Gael Launay, Sales & Marketing Mgr, gael.launay@phaseview.com.



*WaveGauge: Optics Tester for Aspherics, IOL & Contact Lenses.*

## PHASICS SA #802

XTEC Bât 404 Campus de l'Ecole Polytechnique, Palaiseau, France, 91120  
+33 1 69 33 89 99; fax +33 1 69 33 89 88  
contact@phasics.fr; www.phasics.com

**Featured Product: Kaleo-R is the solution for instantaneous, non-contact and precise 2D surface characterization.**

PHASICS, a French company based in the Paris region, manufactures high resolution (up to 400x300 simultaneous measurement points) wave front sensors based on its innovative technology: 4-wave lateral shearing interferometry. These solutions answer both scientific and industrial needs and are ideal for laser characterization and optical metrology. PHASICS also proposes adaptive optics loops for laser spot optimization and beam shaping. Contact: Raphael Serra, Technical Sales Engineer, contact@phasics.fr; Paul Didavi, Product Marketing Engineer, didavi@phasics.com.

## Photon Gear, Inc. #1322 APOMA

245 David Pkwy, Ontario, NY, 14519  
+1 585 265 3360; fax +1 585 265 3364  
sales@photongear.com; www.photongear.com

Photon Gear specializes in the design, assembly and characterization of high-precision optical systems. Custom lens assemblies are verified with interferometric testing from 266nm to 1600nm. Supported application areas include semiconductor inspection and processing, military, metrology, biomedical, laser, scanning, high precision fiber collimators, and polymer optics. We provide optical engineering and design services as well as engineering support for custom software and optical hardware. Contact: Gary Blough, President, blough@photongear.com; John Bowen, Senior Optical Engineer, bowen@photongear.com.

**PROMOTIONAL PARTNER**

## Photonics Media #900

2 South St, Pittsfield, MA, 01201  
+1 413 499 0514; fax +1 413 442 3180  
photonics@laurin.com; www.photonics.com

Photonics Media – the Pulse of the Industry - is Laurin Publishing Company's international suite of media with more than 50 years as the industry's leading publications. In print with Photonics Spectra and BioPhotonics magazines, the EuroPhotonics and AsiaPhotonics feature sections, the Photonics Showcase supplement and the Photonics Buyers' Guide. Also online at Photonics.com. Contact: Timothy Dupree, Regional Manager, photonics@laurin.com; Laura Marshall, Managing Editor, editorial@laurin.com.

## Photonics Online #210

2591 Wexford Bayne Rd, Bldg, 2 Ste. 305, Sewickley, PA, 15143  
+1 724 940 7555; fax +1 724 940 7707  
cbrocious@vertmarkets.com; www.photonicsonline.com

Photonics Online is a comprehensive online resource for engineers and scientists who use optics and photonics technologies in industrial, military/defense, R&D, medical, and other applications. White papers, technical articles, product updates, breaking research, and industry news and views can all be found at www.photonicsonline.com and in our weekly e-newsletter. Contact: Brian Droz, Account Manager, bdroz@vertmarkets.com.



## Precision Glass & Optics

#910

**SPIE** Corporate Member

3600 W Moore Ave, Santa Ana, CA, 92704  
+1 714 540 0126; fax +1 714 540 1482  
info@pgo.com; www.pgo.com

**Featured Product: PG&O offers customized optical fabrication for a variety of commercial and precision applications.**

PG&O offers a wide variety of optical fabrication services for precision optics, optical components, and thin film coatings. Fabrication services include flow waterjet, polishing, grinding, laser marking, edging, beveling, drilling, CNC, and more. The domestic facility's in-house coating chambers



permit precision optical coatings for military, aerospace, astronomy, medical, life sciences, industrial, entertainment, imaging applications, and more. Contact: Thad Sanchez, Sales Director, thad@pgo.com.

*PG&O offers customized optical fabrication for a variety of commercial and precision applications.*

## Precision MicroDynamics Inc.

#303

**SPIE** Corporate Member

3-512 Frances Ave, Victoria, BC, Canada, V8Z 1A1  
+1 250 382 7249; fax +1 250 382 1830  
terlic@pmdi.com; www.pmdi.com

**Featured Product: Our new motion control system, Polaris, is ideal for laser processing and optics manufacturing.**

PMDi is the world leader in high performance motion control, actively supplying and serving the optics and photonics industries. Polaris, our new motion control platform, is the best system in the world for controlling and synchronizing servos, galvos and lasers. Polaris controls and drives are capable of high-speed, sub-nanometer position control and picosecond timing synchronization. PMDI's real time motion control network, Mercury, supports thousands of nodes at GBit/s data rates. Contact: Tom Erlic, Co-Founder, terlic@pmdi.com; Mile Erlic, Co-Founder, merlic@pmdi.com.

## Precitech, Inc., a division of AMETEK

#701

**SPIE** Corporate Member

44 Blackbrook Rd, Keene, NH, 03431  
+1 603 357 2511; fax +1 603 358 6174  
sales@precitech.com; www.precitech.com

**Featured Product: Precitech will have on display the Nanoform 250 Ultra Precision Diamond Turning Lathe.**

Precitech provides ultra precision single point & multi axis diamond turning machines for both rotationally symmetric and freeform applications in non-ferrous, ferrous and High Performance metals. Precitech machines are the most accurate and versatile systems in the world. Our solutions are used in facilities around the world developing technology for a variety of markets: Military and Defense, Optical systems and Ophthalmic, Medical implants, Biomedical sensors and instruments, and Automotive. Contact: Chris Strohshine, Sales Manager, chris.strohshine@ametek.com; Kirk Rogers, Sales Manager, kirk.rogers@ametek.com.

**GENERAL REFRESHMENT AND COFFEE BREAK SPONSOR**

## QED Technologies, Inc.

#215

**SPIE** Corporate Member **APOMA**

1040 University Ave, Rochester, NY, 14607  
+1 585 256 6540; fax +1 585 256 3211  
townell@qedmrf.com; www.qedmrf.com

**Featured Product: Q-flex™, QED's new modular MRF® platform, polishes full freeform, off-axis and other shapes.**

QED Technology provides precise polishing, high resolution stitching metrology, as well as contract polishing and metrology services for high precision optics. Our SSI® metrology systems enable in-process and



final testing of most of the optics in your shop. QED's MRF® polishing systems are predictable, precise and fast. We invite you to the QED booth #215 during Optifab, to learn about the latest developments in QED's polishing and metrology product lines. Contact: Chuck McFee, Global Sales and Marketing Manager, mcfee@qedmrf.com; Robin Townell, Marketing Manager, townell@qedmrf.com.

*Q-flex™ - next generation MRF® from QED Technologies.*

**GENERAL REFRESHMENT SPONSOR**

## R. Mathews Optical Works, Inc.

#1328

**APOMA**

26280 Twelve Trees Ln, Poulsbo, WA, 98370  
+1 360 697 6160; fax +1 360 697 7417  
bob@mathewsoptical.com; www.mathewsoptical.com

R. Mathews Optical Works has been manufacturing prototype and production aspheres for over 25 years. Diameters from 10mm to 300mm are routinely produced on precision grinding and polishing equipment capable of producing low to high deviation aspheric surfaces from all glass types. Contact: Bob Mathews, President, bob@mathewsoptical.com; Nathaniel Mathews, nathaniel@mathewsoptical.com.

## R.W. Lindsay Inc.

#507

581 Rock Beach Rd, Rochester, NY, 14617  
+1 585 544 7310; fax +1 585 544 2028  
lindsaycorp@aol.com; www.rwlindsay.com

## Rayleigh Optical Corp

#1002

**SPIE** Corporate Member

3720 Commerce dr Ste 1112, Baltimore, MD, 21227  
+1 410 247 6666; fax +1 410 247 6666  
info@rayleighoptical.com; www.rayleighoptical.com

ROC manufactures custom optics (up to 2.5m) from a variety of materials specializing in aspherics. ROC has extensive experience in fabricating and testing mirrors, lenses, spheres, null lenses, test optics. Optics for instruments includes spectrographs, WFCs, ADCs, collimators and beam expanders. Test methods include swing-arm profilometry, interferometry with CGHs, holographic test plates. ROC offers a wide range of services including lightweighing of blanks, fabrication and test consulting. Contact: Vilma L-Anderson, info@rayleighoptical.com; David S. Anderson, Director of Large Optics, info@rayleighoptical.com.

# Exhibitor Listing

## Reflexite Energy Solutions #1346

500 Lee Rd Bldg 500, Rochester, NY, 14606  
+1 585 647 1440  
www.reflexite.com

## Roth & Rau MicroSystems GmbH #602

Gewerbering 3, Hohenstein-Ernstthal Saxony, Germany, 09337  
+49 3723 4988 0; fax +49 3723 4988 25  
microsystems@roth-rau.de; www.roth-rau.de/microsystems

**Featured Product: IonScan 3D system for the ion beam finishing of 3 dimensional optical samples.**

Roth & Rau MicroSystems GmbH is a worldwide operating company that provides advanced technology solutions for the coating, structuring and processing of surfaces through the application of plasma and ion beam processes. The process systems are predominantly applied in

the semiconductor industry, in the production of high precision optics and sensors as well as for research and development. Contact: Andrea Kunz, Sales Director, microsystems@roth-rau.de.



*IonScan 3D by Roth & Rau MicroSystems.*

## RSP Technology BV #104

Metaalpark 2, Delfzijl, The Netherlands, 9936 BV  
+31 596 632 300; fax +31 596 632 678  
info@rsp-technology.com; www.rsp-technology.com

**Featured Product: Aluminium for optical applications like mirrors, moulds and structure.**

RSP Technology produces aluminium alloys with superior qualities for optical applications, like mirrors, moulds, housings- and mounting-systems, with advantages for surface roughness, shape stability, strength and low thermal expansion. The meltspinning technology cools materials at a rate of 1 million °C per second, "freezing" the liquid alloy, resulting in superior specifications and an ultra-fine microstructure. RSP Aluminium reaches a surface roughness of less than 1 nanometer. Contact: Roger Senden, Sales Director, rsenden@rsp-technology.com.

## Sagem #808

Avenue de la Tour Maury, St. Pierre du Perray, France, 91280  
+33 1 69 89 72 00  
info.contact@sagem.com; www.sagem-ds.com/optics

**Featured Product: Optics for Astronomy, Space, Industry, High Power Laser.**

Sagem Reosc is recognized as the European leader for Astronomy and Space optics. Sagem Reosc is the High Precision & High Quality Optics division of the Sagem - Safran group. Sagem Reosc has established high level of quality in design/polishing/integration/tests of optical systems from EUV to IR, from 8mm to 8m. Contact: Vincent Patoz, Sales Manager, vincent.patoz@sagem.com; Eric Ruch, Sales Manager, eric.ruch@sagem.com.



*Sagem-REOSC delivers first E-ELT M1 mirror segments.*

## Salem Advanced Surfacing Materials #410

**SPIE Corporate Member**

5901 Gun Club Rd, Winston-Salem, NC, 27103  
+1 800 234 1882  
kgardner@salemDIST.com; www.salemDIST.com

**GENERAL REFRESHMENT SPONSOR**

## Satisloh North America Inc. #515

**SPIE Corporate Member** **APOMA**

N116 W18111 Morse Dr, Germantown, WI, 53022  
+1 262 255 6001; fax +1 262 255 6002  
www.satisloh.com

The Satisloh line includes generators, polishers, laser centering, and coating machines (sputtering) for all applications. A supplier of diamond wheels and pellets, spherometer rings, and spare parts, we offer a complete range of consumable products – including distribution of Mueller Diamonds, Desmopan and Desmoflex polishing pads, and Borer Chemical ultrasonic cleaning products. Contact: Tom Godin, Precision Optics Manager, tom.godin@satisloh.com; Tim Gase, Sales Engineer, tim.gase@satisloh.com.

## Schneider Optical Machines, Inc. #115

**SPIE Corporate Member** **APOMA**

5916 Stone Creek Ste 120, The Colony, TX, 75056  
+1 972 247 4000; fax +1 972 247 4060  
info-us@schneider-om.com; www.schneider-om.com

**Featured Product: SCG 100 & SCP 100 surfacing centers for the uncompromised processing of spherical & aspheric optics.**

Schneider is one of the world's leading suppliers of processing solutions to the precision-optical and ophthalmic industry. Schneider innovations set the pace – in grinding and polishing of precision aspheres, in freeform generating and polishing of eye glasses, and in process metrology.

Schneider offers the full range of generating, polishing, and centering

machines as well as measuring systems for high-quality precision-optics production. Contact: Thomas Danger, VP Sales, Precision Optics, t.danger@schneider-om.com; Kurt Atchison, President, North America, k.atchison@schneider-om.com.



*SCG 100 and SCP 100. Schneider's latest Surfacing Centers, for the uncompromised processing of Spherical and Aspheric Optics.*

## SCHOTT North America, Inc. #601

**SPIE Corporate Member** **APOMA**

400 York Ave, Duryea, PA, 18642  
+1 570 457 7485; fax +1 570 457 6960  
info.optics@us.schott.com; www.us.schott.com

SCHOTT offers a broad range of cutting-edge components & materials for optical & lithographic applications & is a leading manufacturer of "ZERODUR" glass ceramics, colored filters, interference filters, optical, laser, i-line, wafer and display glass. Our manufacturing facilities are integrated from material development to finishing operations including high-precision processing & metrology expertise. Contact: Marlene Deily, Marketing Communications Manager, marlene.deily@us.schott.com; Dr. Heather Rayle, Vice President/General Manager, heather.rayle@us.schott.com.

**Shanghai Modern Advanced Ultra Precision Manufacturing Center Ltd. #107**

20th Fl 2-B, No 2005 Huangxing Rd, Shanghai, China, 200433  
+86 21 5506 3801; fax +86 21 5506 3804  
maupmc@maupmc.com; www.maupmc.com

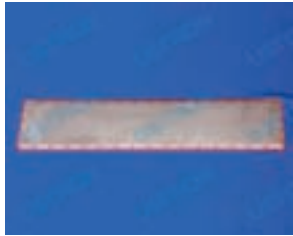
**Shanghai Optics #1314**

**SPIE**

17 Brant Ave Ste 6, Clark, NJ, 07066  
+1 732 321 6915; fax +1 732 875 0298  
sales@shanghai-optics.com; www.shanghai-optics.com

**Featured Product: Evaporations Materials, Coating Accessories, and Sputtering Targets.**

Shanghai Optics is a full service optical fabrication, coating, and assembly company located in Shanghai China with US Sales Engineers. Shanghai Optics is now the authorized dealer for Ustron. Ustron supplies coating materials, accessories, and sputtering targets. Contact: Brad Lewis, Director of Business Development, blewis@shanghai-optics.com.



*Shanghai Optics now offers a wide variety of custom sputtering targets, along with coating materials from USTRON, a global supplier of coating accessories.*

**CONFERENCE BAG INSERT SPONSOR**

**Slicing Tech #411**

432 Mt. Bethel Hwy, Bangor, PA, 18013  
+1 610 588 7884; fax +1 610 588 7885  
mhartman@slicingtech.com; www.slicingtech.com

**Featured Product: Contract slicing of hard and brittle materials on wire saws and ID slicing saws.**

Contact: Mike Hartman, General Manager, mhartman@slicingtech.com.

**Spectra Services #511**

**APOMA**

6359 Den Pkwy, Ontario, NY, 14519  
+1 585 265 4520; fax +1 585 265 4374  
mspecht@spectraservices.com; www.spectraservices.com

**Featured Product: High Speed Imaging System for Particle and Scratch Analysis. Manual and Motorized Alignment tools.**

Spectra Services and SpectraCore distribute and integrate a comprehensive range of microscopy, imaging, laboratory and auto-alignment micro-positioning equipment. New and used/refurbished microscopes and accessories, digital cameras offered at cost-effective solutions meeting your application requirement. Spectra Group sales engineers will specify turn-key solutions for complete laboratory start-ups for universities, R&D and quality control. www.spectraservices.com, www.spectracore.com. Contact: Michael Specht, Sales Manager, mspecht@spectraservices.com; Timothy S. Brei, General Manager, timbrei@spectracore.com.

**GENERAL REFRESHMENT SPONSOR**

**Swift Glass Co. #509**  
**APOMA**

131 W 22nd St, Elmira Heights, NY, 14903  
+1 607 723 7166; fax +1 607 732 5829  
quality@swiftglass.com; www.swiftglass.com

Specializing in the fabrication of custom flat glass components for the Medical Imaging, Semi Conductor, and Defense industries. Materials include Borofloat, Supremax, Pyrex, Vycor, Fused Silica, B-270, Soda Lime, Starphire, Schott and Kopp Color Filters. Capabilities include CNC Machining, heat tempering, chemical strengthening, double sided lapping and polishing, OD grinding, and edge polishing. Contact: Charles Burke, VP, cburke@swiftglass.com; Tony Speciale, Customer Service Manager, tspeciale@swiftglass.com.

**HOTEL ROOM KEY SPONSOR**

**Sydor Optics, Inc. #500**  
**APOMA**

31 Jet View Dr, Rochester, NY, 14624  
+1 585 271 7300 ; fax +1 585 271 7309  
sales@sydor.com; www.sydor.com

Manufacturing precision, flat-surfaced, parallel and wedged optics and specializing in double-sided grinding and polishing. Sydor Optics offers prototype, to high volume OEM production. Products include: beam splitters, color filters, debris shields, glass wafers, grating substrates, light pipes, light-weighted substrates, mirrors, optical flats, wedges, and windows. Also offering laser optics and laser machining. Contact: Mike Naselaris, General Manager, sales@sydor.com; James Sydor, President, sales@sydor.com.

**Synopsys, Inc. #403**

**SPIE**

3280 E Foothill Blvd Ste 300, Pasadena, CA, 91107  
+1 626 795 9101; fax +1 626 795 9102  
info@opticalres.com; www.opticalres.com

**Featured Product: LightTools 7.1 delivers enhanced analysis and ease of use features for illumination system modeling.**

Optical Research Associates, now a part of Synopsys, will exhibit two optical design software products. LightTools® provides virtual prototyping, simulation, optimization and photorealistic renderings of illumination systems. CODE V® has powerful capabilities for lens optimization, analysis, tolerancing, beam propagation and coupling



efficiency. Engineering services will also be exhibited. Contact: Stuart David, Sales Manager, info@opticalres.com; James McGuire, Manager of Optical Engineering Services, engr@opticalres.com.

*CODE V 10.3 enables superior design optimization and tolerancing for aspheres.*



# Exhibitor Listing

## Syntec Optics

#711

**SPIE** Corporate Member

7100 Junction Rd, Pavilion, NY, 14525  
+1 585 768 2513; fax +1 585 768 7138  
info@syntecoptics.com; www.syntecoptics.com

Syntec Optics is the largest, private, manufacturer in the US producing "Plastic Optics for Tomorrow's Technologies". We service the Medical, Defense and Biometric Industries specializing in glass to plastic conversions, design for manufacturability, precision injection molding,



single point diamond turning, tooling, metrology and assembly. Visit www.syntecoptics.com to learn more. Contact: Rick Arndt, VP/GM, rrandt@syntecoptics.com; Doug Hand, Sales Manager, dhand@syntecoptics.com.

*Eye tracking image taking using lens from Syntec Optics.*

## Taylor Hobson - AMETEK UPT APOMA

#801

1725 Western Dr, West Chicago, IL, 60185  
+1 630 621 3099; fax +1 630 231 1739  
taylor-hobson.usa@ametech.com; www.taylor-hobson.com

**Featured Product: Talysurf PGI 3D: Automated Asphere Measurement and Analysis - no limit on slope or departure.**

Taylor Hobson is world renowned as a manufacturer of precision measuring instruments used for inspection in research and production facilities. Our equipment for surface and asphere form metrology performs at nanometric levels of resolution and accuracy. To complement our precision manufacturing capability we also offer a host of metrology support services to provide our customers with complete solutions to their measuring needs and total confidence in their results. Contact: Rick Parnoff, Regional Sales Manager, rick.parnoff@ametech.com; Phil Lockhart, General Manager, North America, phil.lockhart@ametech.com.

## Techmetals, Inc.

#603

**SPIE** Corporate Member

345 Springfield St, Dayton, OH, 45403  
+1 937 253 5311; fax +1 937 253 5096  
info@techmetals.com; www.techmetals.com

**Featured Product: Engineered Optic Nickel Alloys for SPDT; Optakoat and TM103 Optic EN.**

Techmetals offers Optakoat - the coating of choice for SPDT applications of precision optics, mirrors, critical optic molding applications, BEF and solar panel film production. Techmetals also offers Optic Grade EN, Anodize, Silver, as well as TM-Rx Medical Grade Chrome, Medically approved Electro polish, Passivation and Titanium Anodize. See our complete list of custom designed coatings at www.techmetals.com. Contact: Steve Deisher, GM - Optics Division, sdeisher@techmetals.com; Kenny Hindman, Metal Finishing Specialist, khindman@techmetals.com.

## Technodiamant USA Inc.

#706

35A Kennedy Rd, Box 398, Tranquility, NJ, 07860  
+1 908 850 8505; fax +1 908 850 8506  
info@technodiamant.com; www.technodiamant.com

Technodiamant manufactures a full range of diamond tools including controlled waviness tools for precision diamond turning, CVD diamond windows and ATR products, diamond core drills, diamond and CBN wheels, and custom CBN/PCD tooling. Along with our sister company Contour Fine Tooling, we have 6 global manufacturing locations. Diamond tools can be supplied with edge waviness down to 50 nm P-V and 1 micron tip radius. Contact: David Slaperud, Sales Manager, dave@technodiamant.com.

## TECHNOTRADE International, Inc. #203

7 Perimeter Rd, Manchester, NH, 03103  
+1 603 622 5011; fax +1 603 622 5211  
sales@technotradeinc.com; www.technotradeinc.com

**Featured Product: Processes and Products for residue-free Cleaning.**

TECHNOTRADE International is the stocking distributor of Borer Chemie, a leading supplier of environmentally safe, aqueous based products and technologies for the cleaning and stripping a wide range of materials including metals, glass and plastics. The deconex® product line has been developed for use in spray, brush and ultrasonic systems. Highlighted at the show are cleaning chemistries for Optics, Ophthalmic and Metal manufacturing. Contact: Johnny Hagen, VP-Marketing and Sales, sales@technotradeinc.com; Nathan Tsianco, Sales, sales@technotradeinc.com.

## Tecport Optics, Inc.

#200

**SPIE** Corporate Member

6901 TPC Dr Ste 450, Orlando, FL, 32822  
+1 407 855 1212; fax +1 407 855 1213  
sales@tecportoptics.com; www.tecportoptics.com

Manufacturer of Vacuum Coating Systems for Precision Optics, Flat Panel Display, Imaging, and Telecommunication applications. An industry leader in innovation, quality, reliability, software and service. Sophisticated yet user friendly systems employ leading edge technology such as plasma assisted deposition. Systems are custom built and pre-configured for your process and your volume. Onsite service and annual service contracts available. Contact: Frank Helmes, Director of Sales, fhelmes@tecportoptics.com; Tam Le, President, tamle@tecportoptics.com.

## Telemark #116

1801 SE Commerce Ave, Battle Ground, WA, 98604  
+1 360 723 5360; fax +1 360 723 5368  
sales@telemark.com; www.telemark.com

**Featured Product: New and improved engineering on multiple electron Beam guns/sources.**

Provider of: electron beam components for thin film deposition processes, ferrofluidic feedthroughs, cryogenic water vapor cryopumps, Optical Monitors from 200-2500 micron, Plasma Chemistry monitors, Ion Sources, crucible indexers, deposition controllers. Contact: Gary Henderson, President, garyh@telemark.com; Tom Guppenberger, Director of Service, tomg@telemark.com.

## Tempo Plastic Co.

#1330

**SPIE** Corporate Member **APOMA**

1227 N Miller Park Ct, Visalia, CA, 93291  
+1 559 651 7711  
tempo@tempo-foam.com; www.tempo-foam.com

**Featured Product: New packages for optics and substrates.**

Stock and custom protective packages and handling trays. Static dissipative, Clean room compative foam. Labor saving, dust-free. Contact: Doug Rogers, President, tempo@tempo-foam.com.

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## Trio Optics GmbH

#807

SPIE Corporate Member

Hafenstr 35-39, Wedel, Germany, 22880  
+49 4103 18006 0; fax +41 4103 18006 20  
info@trioptics.com; www.trioptics.com

**Featured Product: OptiCentric 3D center thickness and air gap measurement of complex optical systems.**

Manufacturer of fully PC controlled optical test equipment: OptiCentric® automated centration error measurement, alignment, centering, center thickness measurement, cementing & bonding; OptiSpheric® complete optical characterization (EFL, BFL, MTF, radius); ImageMaster® MTF-characterization UV-VIS-IR; WaveMaster® real time wavefront analysis with Shack-Hartmann sensors; µPhase® interferometers, PrismMaster® prism measurement; TriAngle® electronic autocollimators, visual autocollimators. Contact: info@trioptics.com.



*OptiCentric 3D: complete optomechanical characterization of complex optical systems. Center thickness and air gap measurement.*

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#1009

APOMA

259 Worcester St, Southbridge, MA, 01550-1376  
+1 508 765 5421; fax +1 508 765 0500  
kplouffe@unitedlens.com; www.unitedlens.com

Custom manufacturer of molded blanks, precision machined blanks, precision flat optics and thin film coatings. Materials include optical glasses, filter glasses, low expansion glasses, fused silica, quartz and various other industrial glasses. Large inventories and modern manufacturing facility allow for industry leading reliability and unsurpassed quality. Contact: Ken Plouffe, Sales Manager, kplouffe@unitedlens.com; Paul Digregorio, Vice President, pdigregorio@unitedlens.com.

## Universal Photonics, Inc.

#815

SPIE Corporate Member APOMA

495 W John St, Hicksville, NY, 11801  
+1 516 935 4000; fax +1 516 935 4039  
info@universalphotonics.com; www.universalphotonics.com

**Featured Product: NANOTEC (known as SOMOS in Europe) 200 RPM, Double-Sided Lapping & Polishing Machines.**

Specializing in developing & formulating consumables & machinery for lapping/polishing glass, plastic, crystals, infrared, semiconductor, electro, laser & fiber optics. Including polish pads & compounds, ultra-pure alumina, colloidal silicas, thermoplastic adhesives, holding foils, diamond powders, compounds & lapping film, slurries for sapphire/CaF, lens bonding material, precision pitch, waxes & cements. Machinery: Advantage & DAMA, HKS centrifuges, NANOTEC Double-sided Lapping & Polishing. Contact: Justin Mahanna, Technical Sales Representative, justinm@universalphotonics.com; John Pecorella, Sales Rep, johnp@universalphotonics.com.

## University of Rochester, The Institute of Optics

#504

SPIE Corporate Member

275 Hutchinson Rd Wilmot Bldg, PO Box 270186, Rochester, NY, 14627

+1 585 275 2322; fax +1 585 244 4936

www.optics.rochester.edu

Comprehensive education (BS, MS, PhD) and research in Optical Science and Engineering. External programs include: The Industrial Associate Program, which meets on campus twice annually; and the Annual Optics Summer School Program, a series of introductory and intermediate short courses. See www.optics.rochester.edu. Contact: Prof. Wayne Knox, Director and Professor, wknox@optics.rochester.edu; Gary Wicks, Associate Director and Professor, wicks@optics.rochester.edu.

## Vacuum Innovations

#208

111 Knickerbocker Rd, Pittsford, NY, 14534

+1 585 330 0746; fax +1 585 219 5206

www.vacuuminnovations.com

**Featured Product: Our new e-gun emitter is easy to rebuild, with fewer parts and consistent filament placement.**

Vacuum Innovations manufactures exceptionally-engineered, high-quality equipment for optical coating processes. We understand the frustration of equipment failures, lengthy downtimes, and the impact on your productivity. We engineer products that ensure consistency and uniformity — providing higher yields, easier maintenance, and a better return on investment. Whether you need a planetary rotation, system controller, substrate heaters, or a fully redesigned system, we have you covered. Contact: James Oliver, President, joliver@vacuuminnovations.com; Bill Branagan, Independent Sales Representative, bill@ptlvacuum.com.

## Vacuum Process Technology LLC #407

SPIE Corporate Member

70 Industrial Park Rd, Plymouth, MA, 02360

+1 508 732 7200; fax +1 508 732 0317

sales@vpotec.com; www.vpotec.com

Vacuum Process Technology LLC is a solutions provider for a wide range of industries using PVD thin film coating technology. Coating systems range from 24-inches to 120-inches in both batch and in-line configurations. VPT incorporates engineering design, controls, fabrication, assembly and process development all under one roof, thus allowing us to deliver complete turn-key solutions to our customers. Contact: Steve Chiavaroli, Sales Manager, schiavaroli@vpotec.com.

## Valtech Corp.

#606

APOMA

2113 Sanatoga Station Rd, Pottstown, PA, 19464

+1 610 705 5900; fax +1 610 705 0300

l.sacerdote@valtechcorp.com; www.valtechcorp.com

**Featured Product: Formulated detergents, Custom molded polymer mounting beams, and Specialty adhesives.**

Valtech Corporation manufactures specialty materials including aqueous detergents, formulated adhesives, and custom-molded polymers. Our high technology specialty products fulfill diverse market applications including the precision optical, ophthalmic, semiconductor, medical, photo-voltaic, computer disk drive, and instrumentation industries. Valtron products provide unique and enhanced performance characteristics that will improve your manufacturing yields. Contact: Lynne Sacerdote, Market Development Manager, l.sacerdote@valtechcorp.com; Richard Girard, President, R.girard@valtechcorp.com.

# Exhibitor Listing

## VisiMax Technologies, Inc. #1308

9177 Dutton Dr, Twinsburg, OH, 44087  
+1 330 405 8330; fax +1 330 405 8332  
smyers@visimaxtechnologies.com;  
www.visimaxtechnologies.com

VisiMax ITAR registered, world class provider of precision optical coatings for both glass and polymer optics. VisiMax offers an extensive range of coating types including anti-reflection, beamsplitters, mirrors, protective hardcoatings, bandpass filters/dichroics, and dielectric reflectors, as well as custom coating designs. VisiMax uses state-of-the-art optical coating systems and automation within clean room facility. Contact: Dane Clark, Director of Operations, dclark@visimaxtechnologies.com; Brian Murphy, CEO, bmurphy@visimaxtechnologies.com.

## Wells Research & Development #110

15 A Lewis St, Lincoln, MA 01773  
+1 781 259 8667; fax +1 781 259 8009  
info@wellsresearch.com; http://www.wellsresearch.com

## Wordingham Technologies #711

**SPIE** Corporate Member

580 Fisher Station Dr, Victor, NY, 14564  
+1 585 924 2294; fax +1 585 924 7660  
borcutt@wordingham.com; www.wordingham.com

Wordingham Technologies is your "Mechanical Partner to the Optical World" providing precision machined components that are critical to function and aesthetics. We can help you reduce total costs and lead time with fewer rejected parts and KanBan for on-demand components. Visit us at [www.wordingham.com](http://www.wordingham.com) for more information. Contact: Bob Orcutt, GM, borcutt@wordingham.com.



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## Wrisley Abrasives #311

PO Box 631, Simsbury, CT, 06070  
+1 860 651 1813; fax +1 860 658 7773  
info@bwabrasives.com; www.bwabrasives.com

**Featured Product: Wrisley Abrasives now offers Secured Diamond Saw Wire (SDS). Come demo our digital microscope!**

Wrisley Abrasives has engineered diamond tools for precision optics for over 20 years! We have a tremendous amount of experience grinding an array of materials including IR, visible, hard crystals, and ceramics. We offer a wide range of diamond tool geometries such as generators, end mills, core drills, band saw blades, and numerous wheel types. Bond types include metal bond, resin bond, copper-filled resin, electroplated, and brazed. US made for quick delivery and competitive price. Contact: Dan Patrick, President, dan@bwabrasives.com.

## Xactra Technologies #405

9 Marway Circle, Rochester, NY, 14624  
+1 585 426 2030; fax +1 585 426 2709  
sales@xactra.com; www.xactra.com

Xactra Technologies, produces precision custom machined components for the optics/photonics marketplace. Our meticulous attention to detail and high quality standards are well known to many major OEM optical companies. We provide precision components for all optical devices: Lenses, laser instrumentation, military/defense, machine vision, positioning systems, and medical devices. Xactra Technologies: Quality obsessed, Schedule driven and Competitively focused. Contact: J. Michael Grady, VP, sales@xactra.com.

## Zeeko Ltd. #306

4 Vulcan Court, Vulcan Way, Coalville Leicestershire, United Kingdom, LE67 3FW  
+44 1530 815 832; fax +44 1530 939 631  
info@zeeko.co.uk; www.zeeko.co.uk

**Featured Product: Ultra Precision Polishing Solutions for Complex Surfaces.**

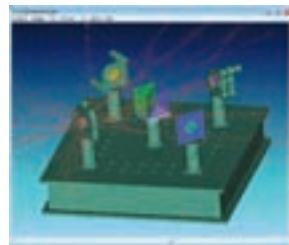
Zeeko manufactures corrective polishing machines for fabricating high precision optics, orthopaedic joints, semiconductor applications and precision moulds. The machines are supplied with software and processes suitable for the production of the most complex freeform artifacts. Covering a range of sizes from 1.5mm to 6m they utilize patented processes including the mechanical "ZeekoClassic" technology and the "ZeekoJet" solution. Contact: Richard Freeman, Managing Director, info@zeeko.co.uk; Niall McGee, Company Scientist, niall.mcgee@zeekoresearch.com.

## ZEMAX Development Corp. #901

3001 112th Ave NE Ste 202, Bellevue, WA, 98004-8017  
+1 425 822 3406; fax +1 425 889 4687  
sales@zemax.com; www.zemax.com

**Featured Product: The new ZEMAX Black Box lets you share optical design data without revealing design secrets.**

ZEMAX is the software that optical engineers and designers around the world choose for lens design, illumination, laser beam propagation, stray light, freeform optical design and many other applications. ZEMAX leads the industry in technical power, ease of use and proven accuracy. Whatever kind of optical system design problem you have, ZEMAX can help. Contact: Mark Nicholson, Vice President, Operations, mark@zemax.com.



*ZEMAX models Twyman-Green interferometers, including stray light from optomechanical components.*

## Zygo Corporation #715

**SPIE** Corporate Member **APOMA**

Laurel Brook Rd, Middlefield, CT, 06455-1291  
+1 860 347 8506; fax +1 860 347 3968  
inquire@zygo.com; www.zygo.com

With unparalleled experience and reputation, ZYGO provides interferometric instruments, and precision optical components, assemblies, and electro-optical design to the aerospace, defense, semiconductor, and optical industries. Our precision noncontact measuring instruments and systems enable manufacturers to increase operating efficiencies and product yields by identifying and collecting quantitative data on product defects during and after the manufacturing process. Contact: George

Neale, Director of Sales and Support, gneale@zygo.com; Marc Tricard, Director Business Development OSD, mtricar@zygo.com.



*DynaFiz™ Interferometer with LivePhase™ for High Performance Dynamic Metrology.*



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P.R. Hoffman Machine Products  
Satisloh North America Inc.  
TECHNOTRADE International, Inc.  
Universal Photonics, Inc.  
Valtech Corp.  
Wrisley Abrasives

## Astronomy

4D Technology Corp.  
Applied Surface Technologies  
Cranfield UPS<sup>2</sup>  
ESDI  
Glass Fab Inc.  
Ohara Corp.  
OpTIC  
Optimax Systems, Inc.  
Precision Glass & Optics  
QED Technologies, Inc.  
Rayleigh Optical Corp  
Sagem  
SCHOTT North America, Inc.  
Universal Photonics, Inc.

## Cameras and CCD Components

Hoya Corporation USA - Optics  
Division  
Intlvac  
Olympus America Inc.  
Spectra Services  
Xactra Technologies

## Chemical & Biological Sensing

Shanghai Optics

## Clinical, Chemical and Biological Instrumentation

Xactra Technologies

## Displays

Chardon Tool  
Contour Fine Tooling  
Evaporated Metal Films Corp.  
Intlvac  
North American Coating  
Laboratories  
Oxford Instruments America  
Synopsys, Inc.  
Tempo Plastic Co.

## Distributor or Reseller

Mildex, Inc.  
TECHNOTRADE International, Inc.  
Universal Photonics, Inc.

## Electron-Beam Lithography

FLIR Systems

## Electronic Imaging Components, Equipment, Systems

JML Optical Industries Inc.  
Optiworks, Inc.  
Optix Co.  
Spectra Services

## EUV Lithography

Sagem  
Synopsys, Inc.

## Fiber Optic Components, Equipment, Systems

II-VI Infrared  
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Technodiamant USA Inc.

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Angstrom Precision Optics Inc.  
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DAC International, Inc.  
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dopa diamond tools  
Dyna Technologies, Inc.  
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OptiPro Systems  
Optiworks, Inc.  
OptoTech Optical Machinery  
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Sagem  
Shanghai Optics  
Sydor Optics, Inc.  
Techmetals, Inc.  
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Tecport Optics, Inc.

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Vacuum Process Technology LLC  
VisiMax Technologies, Inc.  
Zygo Corporation

## High Speed Imaging and Sensing

JML Optical Industries Inc.  
Spectra Services  
Xactra Technologies

## Illumination Engineering

Chardon Tool  
Dyna Technologies, Inc.  
Synopsys, Inc.

## Infrared Sources, Detectors, Systems

Epner Technology, Inc.  
Hoya Corporation USA - Optics  
Division  
PHASICS SA

## Ion-Beam Lithography

Oxford Instruments America

## Lasers and Other Light Sources, Laser Accessories, Laser Systems

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Metrology Concepts LLC  
PhaseView  
Photon Gear, Inc.  
Precision MicroDynamics Inc.

## Law Enforcement Technologies

Optix Co.

## Life Sciences

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Bullen Inc.  
Hach Company  
PhaseView

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Cranfield UPS<sup>2</sup>  
Diffraction International Ltd.  
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Spectra Services  
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Taylor Hobson - AMETEK UPT  
Technodiamant USA Inc.  
Trioptics GmbH  
Zeeko Ltd.  
Zygo Corporation

## Nanotechnology

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Cranfield UPS<sup>2</sup>  
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Intlvac  
Loadpoint Bearings UK Ltd.  
OpTIC  
Oxford Instruments America  
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AMETEK  
Technodiamant USA Inc.

## Non-Optical Lithography

FLIR Systems

## Optical Components

4D Technology Corp.  
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Syntec Optics  
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Tempo Plastic Co.  
United Lens Co., Inc.  
Wordingham Technologies  
Xactra Technologies  
Zygo Corporation

## Optical Detectors

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PHASICS SA  
Shanghai Optics

## Optical Fibers

Intlvac

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OptiPro Systems  
Optix Co.  
Precision Glass & Optics  
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Vacuum Innovations  
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Techmetals, Inc.  
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TECHNOTRADE International, Inc.  
Tecport Optics, Inc.  
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#### OUR MISSION STATEMENT

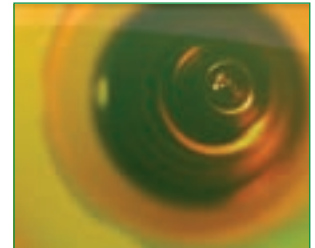
**APOMA** represents a broad constituency of precision optics manufacturers, and the supporting industry along with academic associates, whose mutual interest is the advancement and expansion of optics manufacturing and technology. **APOMA** is pledged to act on behalf of its members, whose common interests are far more important than the small differences that have for too long fragmented the industry. Common concern and cooperation are the essential foundation of sustaining a viable technology base.

#### INDUSTRY ADVOCATE

In 1988, **APOMA** wrote a comprehensive industrial modernization proposal advocating the effective cooperation of industry, academia and government. Areas that receive **APOMA** support are: Optical Standards, OptiFab, Optical Fabrication Training and Student Travel to Optical Fabrication and Testing seminars.

#### MEETINGS & PUBLICATIONS

- **APOMA** schedules at least two national meetings each year. Meeting dates and times conveniently coincide with the major conferences of the SPIE and OSA. Members are advised of the meeting day and time.
- **APOMA** Members receive a newsletter discussing issues, activities, meeting dates and items of critical interest.



#### OBJECTIVES

- Provide a forum for peers and associates to discuss opportunities and concerns in the optics industry.
- Initiate actions that stimulate advances in science, technology and business opportunities for the optical community.
- Serve as a unified, coherent voice in promoting expansion and growth of the optics manufacturing base.

American Precision Optics Manufacturers Association  
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**Exhibition dates**

15-17 October

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