



# 2011 Defense Security+Sensing

Moving Technology to Market™

## Exhibition Guide

**Exhibition:** 26-28 April 2011

**Conferences and Courses:** 25-29 April 2011

Orlando World Center Marriott Resort  
& Convention Center  
Orlando, Florida, USA

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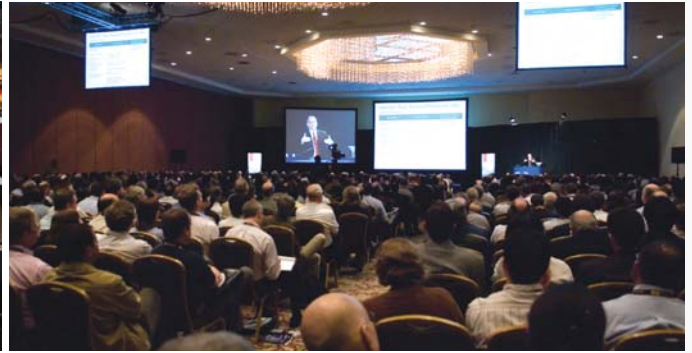
Moving Technology to Market™

# SPIE Defense, Security & Sensing

Exhibition: 26 – 28 April 2011

Conferences and Courses: 25 – 29 April 2011

Orlando World Center Marriott Resort & Convention Center Orlando, Florida, USA



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SPIE is the international society for optics and photonics founded in 1955 to advance light-based technologies. Serving more than 188,000 constituents from 138 countries, the Society advances emerging technologies through open interdisciplinary information exchange, continuing education, publications, patent precedent, and career and professional growth.



# General Information



## Headquarters Hotel

### Orlando World Center Marriott

8701 World Center Drive, Orlando, FL 32821

Phone: +1 407 239 4200 · Fax: +1 407 238 8777

## Onsite Registration Hours

|                    |                    |
|--------------------|--------------------|
| Sunday 24 April    | 5:00 pm to 8:00 pm |
| Monday 25 April    | 7:00 am to 5:00 pm |
| Tuesday 26 April   | 7:30 am to 5:00 pm |
| Wednesday 27 April | 7:30 am to 5:00 pm |
| Thursday 28 April  | 7:30 am to 2:30 pm |

## Exhibition Hours

Orlando World Center Marriott Resort & Convention Center  
Cypress and Palms Ballroom

|                    |                 |
|--------------------|-----------------|
| Tuesday 26 April   | 9:30 am to 5 pm |
| Wednesday 27 April | 10 am to 5 pm   |
| Thursday 28 April  | 10 am to 2 pm   |

## Food and Beverage Services

### Coffee Breaks

Coffee will be served at the following times and locations. Please review your program to see when your conference is scheduled to break for coffee.

|           |                                    |                                 |
|-----------|------------------------------------|---------------------------------|
| Monday    | 10:00 to 11:00 am; 3:00 to 4:00 pm | Grand Foyer                     |
| Tuesday   | 9:30 to 10:30 am; 3:00 to 4:00 pm  | Exhibition Halls                |
| Wednesday | 10:00 to 11:00 am; 3:00 to 4:00 pm | Exhibition Halls                |
| Thursday  | 10:00 to 11:00 am; 3:00 to 4:00 pm | Exhibition Halls<br>Grand Foyer |
| Friday    | 10:00 to 11:00 am; 3:00 to 4:00 pm | Grand Foyer                     |

### Lunch Locations

Canary Ballroom

The Marriott will provide concessions with a variety of hot and cold items. There are also various choices in the Marriott Food Court. High Velocity and the Poolside Grill will also be open.

## Course Materials Desk

Crystal Registration Desk  
Open during registration hours

If you have registered to attend a course, stop by the Course materials Desk after you pick up your badge, to obtain your course notes and course location. Pick up a copy of the latest Education Services catalog to see SPIE Courses at symposia, on video and CD-ROM, and to discover the opportunities of customized In-Company courses.

## SPIE Receipts, Badge Corrections, Cashier

**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 Badge Corrections and Receipts counter in the registration area.

**Badge Corrections** – Attendees who need a correction to their badge information onsite may do so at the Badge Corrections and Receipts counter in the registration area.

**Cashier Station** – If you are paying by cash or check as part of your onsite registration, wish to add a short 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.

### Desserts

Palms and Cypress Exhibition Halls Tuesday and Wednesday

Dessert snacks will be served from 3:00 to 3:30 pm. Complimentary tickets for the dessert snacks will be included in attendee registration packets.

### Free Popcorn

Palms and Cypress Exhibition Halls

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Popcorn carts will be open Tuesday and Wednesday from 11:00 am to 3:00 pm; Thursday from 11:00 am to 2:00 pm.



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# General Information

## SPIE Onsite Services

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### SPIE Marketplace

Grand Atrium

Open during registration hours, Monday–Friday

The SPIE Marketplace is your source for the latest SPIE Press books, Proceedings, and Educational and Professional Development materials. Become a member of SPIE, explore the Digital Library, and take home a souvenir.

### SPIE Job Fair – *Special 2-Day Event!*

Cypress 1 Foyer · Admission is free; Registration is required.

Tuesday 26 April . . . . . 9:30 am to 5:00 pm

Wednesday 27 April . . . . . 10:00 am to 5:00 pm

Top employers are coming together to interview and hire. Whether you're looking for a better job, re-entering the workforce or just starting your career, plan to visit the Job Fair at SPIE Defense, Security, and Sensing – come prepared to discuss your skills and talents with our industries leaders.

- Discuss career options with employers
- Build your network
- Gain visibility with hiring companies
- Post your resume today! Visit the Career Center on [spie.org/careercenter](http://spie.org/careercenter)

**NOTE:** Many of the positions posted to this career event require an active security clearance or the ability to acquire one.

For more information see p. 25.

### Press & Media Center

Cypress Foyer

The Press & Media Center provides press conference facilities, refreshments, and press releases from exhibitors. Credentialed media are invited to communicate news via the provided telephone and high-speed internet connections. Registration and exhibition fees are waived for working journalists and editors. Preregister by e-mailing name, organization, title, address, e-mail, and phone number to [media@spie.org](mailto:media@spie.org).

## Business Services

---

### Attraction Tickets or Activities

The Marriott Group Concierge will have a fully staffed VIP Concierge Desk near SPIE registration to assist SPIE Defense, Security, and Sensing attendees with discounted attraction tickets, dining reservations, golf tee times, and local information on shopping, local parks, and activities.

All attendees who ordered tickets on-line can pick-up their tickets at the Concierge Desk at the Orlando World Center Marriott upon arrival at no cost.

### SPIE Copy Center

Across from Crystal Salon K

San Diego Copy will provide a copy service during the week for symposium attendees. The rates are 5 cents per copy and \$1 per transparency (\$2.50 for color).

### Guest Hospitality Suite

Suite 22876

Guests of attendees are invited to meet, relax, and enjoy a cup of coffee and breakfast breads in the SPIE Guest Hospitality Suite. The Suite will be open Monday 10:00 to 11:30 am and Tuesday through Thursday from 8:30 to 10:00 am. This event is for guests of SPIE Defense, Security, and Sensing attendees only.

### Internet Pavilion

Crystal Foyer

SPIE will have a complimentary Internet Pavilion open during registration hours. Attendees can use provided workstations or hook up their laptop to an Ethernet connection to access the Internet.

### Complimentary Internet Wireless Access

Canary Ballroom & Atrium and Cypress Foyer

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SPIE is pleased to provide complimentary wireless access to the Internet for all conference attendees bringing 802.11b wireless-enabled laptops or mobile devices.

### SPIE Message Center

SPIE has an urgent message line available during registration hours Sunday through Friday (407-309-7873).

### Child Care

All About Kids Professional Child Care, toll free 1-800-728-6506, Phone (407) 812-9300, [www.All-About-Kids.com](http://www.All-About-Kids.com), or email [AAboutKids@aol.com](mailto:AAboutKids@aol.com)

**Note:** SPIE does not imply an endorsement nor recommendation of these services. They are provided on an “information only” basis for your further analysis and decision. Other services may be available.

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## 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 Audiovisual 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 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.

### 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.

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Booth #3402

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VISION

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# New Technology Demos and Displays

SPIE Defense, Security and Sensing Exhibition will again feature New Technology Demos and Displays. Located in the Palms Exhibition Hall, see map p. 28–29.

## Attendees will see:

Latest technology developments of imaging and sensing technologies for:

- Defense, Industrial, and Commercial Applications
- Situational Awareness Top-Mount Surveillance System
- High-Power Scanning-Electron Microscopes
- Real-World Applications of Laser Power Beaming Systems for UAVs
- High-Speed, High-Precision Imaging at Work with Audience Participation

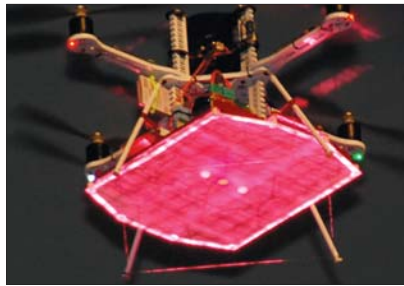
## Products being featured at the New Technology Demos and Displays:



### JEOL

**Booth #3707**

The JEOL InTouchScope with multi-touch screen features EDS analysis in a compact full-featured Scanning Electron Microscope (SEM) for failure analysis and forensics.



### LaserMotive, LLC Booth #3701

Example of an innovative laser power beaming system powering unmanned aerial vehicles.



### PVP Advanced EO Systems, Inc.

**Booth #3713**

Night Hawk Static Azimuth mount is a high-performance pan-and-tilt system ideal for day/night surveillance and perimeter security.



### Boulder Imaging, Inc.

**Booth #3719**

Demonstration on high-speed, high-performance, and high-precision imaging systems.

#### PRESENTATION SCHEDULE:

Tuesday April 26 – 11:00 am, 1:00 pm, and 3:00 pm;

Wednesday April 27 – 11:00 am, 1:00 pm, and 3:00 pm;

Thursday April 28 – 11:00 am and 1:00 pm





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NEW FOR 2011

# Imaging Gallery

Monday 25 April • 6:00 to 7:30 pm

Displayed Outside the Welcome Reception

Hosted by **StingRay**



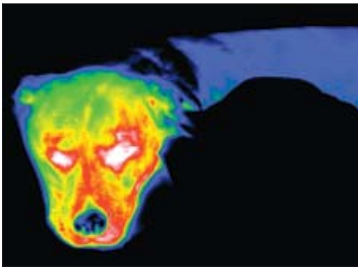
**SPIE**

StingRay Optics and SPIE are proud to announce an exciting new addition to the SPIE Defense, Security, and Sensing Event.

Choice images showcasing technologies upon which SPIE was originally founded are displayed for the enjoyment of all symposium attendees.

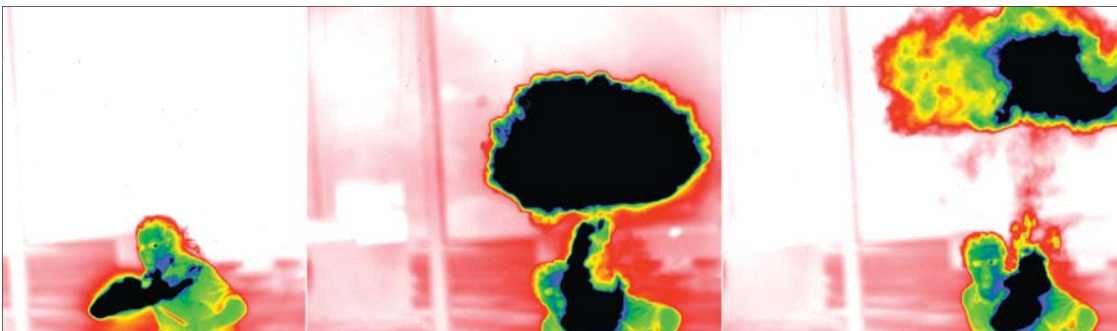
The images range from professional applications to artistic renditions and creative scenes – be sure not to miss the first-ever Imaging Gallery at SPIE Defense, Security, and Sensing 2011.

## You will see:



### Sleeping dog “Deuce”

Imaged using a 50mm F/2.5 Superband™ Lens by StingRay Optics with a QWIP based Camera



### Fire Breather Series

Imaged using a 150mm F/2.0 LWIR lens by StingRay with QWIP based camera



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- ▶ border/homeland security
- ▶ fusion with thermal imagers

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visible image

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**Anacapa SWIR™ 640A**



| Camera System Parameters  | (Alternative Versions Available) |
|---------------------------|----------------------------------|
| Camera Model Number       | Anacapa SWIR™ 640A               |
| Pixel Format              | 640 x 512                        |
| Spectral Response         | .9 to 1.7 $\mu\text{m}$          |
| Pixel Operability         | $\geq 99.5\%$                    |
| Automatic Camera Exposure | Yes                              |
| Weight w/o Lens           | 164 grams (.36 lbs)              |
| Size (inches)             | 2.0" x 2.0" x 2.1"               |
| Cooling Method            | Thermoelectric                   |
| Integration Type          | Staring Snapshot                 |
| System NEI (ph/cm2-s)     | 1.0E9 photons/(cm2-sec)          |
| Operating Temp Range      | -40° to 55° C                    |
| Non-uniformity Correction | 6 Tables                         |
| Image Control             | RS-232                           |
| Output Formats            | Camera Link, HDMI or HDSDI       |



**Eagle MWIR™ 640A**

| Camera System Parameters  | (Alternative Versions Available)  |
|---------------------------|-----------------------------------|
| Camera Model Number       | Eagle MWIR™ 640A                  |
| Pixel Format              | 640 x 512                         |
| Spectral Response         | 3.6 to 4.9 $\mu\text{m}$          |
| Pixel Operability         | $\geq 99.5\%$                     |
| Automatic Camera Exposure | Yes                               |
| Weight w/o Lens           | 535 grams (1.175 lbs)             |
| Size with 19-275 CZ Lens  | 7.5" x 3.8" x 3.6"                |
| Cooling Method            | 1/4 Watt Integral Stirling Cooler |
| Integration Type          | Snapshot                          |
| System NEDT               | $\leq 35\text{ mK}$               |
| Operating Temp Range      | -30° to +58° C                    |
| Non-uniformity Correction | 5 Tables                          |
| Image Control             | RS-232                            |
| Output Formats            | Camera Link and RS-170            |



### MINIATURE CAMERA ELECTRONICS

Nova Sensors specializes in the design and development of low power, low-noise, highly-integrated, miniature camera electronics that operate visible and infrared focal plane arrays. From the circuitry that runs our own VASIT™ FPAs (cooled or uncooled) to the flexible electronics we can adapt to FPAs from other manufacturers, Nova Sensors has a host of customizable miniature camera electronics solutions.

### CUSTOM ENGINEERING

Notwithstanding an enviable record of achievement, Nova is still a young company: lithe, flexible, ambitious, stretching itself in the market. Our IR team, no mere collection of individuals, is an interwoven intelligence of experienced, adroit professionals at the top of their field and the height of their game. Offered a challenge, the team's answer: "Of course we customize."

# Special Events



**Open to All Attendees**  
EXHIBITION VISITORS,  
EXHIBITORS, AND TECHNICAL  
CONFERENCE ATTENDEES

## Symposium-Wide Plenary Presentation

Tuesday • 8:30 to 9:30 am • Location: Crystal H

### **Dr. Regina E. Dugan**

Director, Defense Advanced Research Projects Agency (DARPA)

Dr. Regina Dugan, Director, DARPA will deliver the Symposium-wide Plenary Presentation at this year's meeting.

In her role as Director, Dr. Dugan leads the DoD agency responsible for the creation and prevention of strategic technology surprise. From its founding more than 50 years ago to current day, this mission implies one imperative for the Agency: radical innovation for national security. Today DARPA is the principal agency within the DoD for research, development and demonstration of high-risk, high-payoff projects for the current and future combat force.

Appointed by Secretary of Defense, Robert M. Gates, and announced by the Director, Defense Research and Engineering, Zachary Lemnios, Dr. Regina E. Dugan was sworn in as the 19th director of the Defense Advanced Research Projects Agency (DARPA) on July 20, 2009.




## All Symposium Welcome Reception

Monday 25 April • 6:00 to 7:00 pm • Grand 7 Ballroom  
Open to All Conference Attendees and Exhibitors

All attendees are invited to the Welcome Reception. Relax, socialize, and enjoy the refreshments. Featuring IR Image Galley Display presented by SPIE and StingRay Optics. Also watch as attendees have a chance to race FLIR's unmanned vehicles in an intense obstacle race for prizes.

Please remember to wear your registration badges. Dress is casual.

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# Professional Development

Spend some time focusing on your career development while you're at SPIE Defense, Security, and Sensing. Workshops and presentations will help you be more successful.

## Workshops

Registration required for the workshops below.

### Leading Successful Product Innovation

**WS951 • Course level: Intermediate**  
**CEU .35 Member \$325 / Non-member \$375 USD**  
**Tuesday 8:30 am to 12:30 pm**

The fundamental goal of this course is to answer the question: "How do I take an idea off the white-board and turn it into a windfall product?" We will explore and apply the principles of good leadership to create a culture of excellence within your organization—the most basic ingredient for success. A special emphasis will be placed on learning how to develop and construct an effective new project pitch using the instructor's "Disciplined Creativity" concept and framework. We will then describe the "Spiral Development Process" for rapid, effective, and successful prototype development, followed by an in-depth examination of the life-cycle approach to product development. This course will also enable you to conduct a "red teaming" exercise to identify competitive threats, identify weaknesses in your company, and most importantly, develop solution strategies. We will also place an emphasis on how to properly vet an idea and how to ask tough-minded questions designed to ferret out shortcomings.

Instructor: **John Carrano** is President of Carrano Consulting. Previously, he was the Vice President, Research & Development, Corporate Executive Officer, and Chairman of the Scientific Advisory Board for Luminex Corporation, where he led the successful development of several major new products from early conception to market release and FDA clearance.

### Basic Optics for Non-Optics Personnel

**WS609 • Course level: Introductory**  
**CEU .20 \$150 / Non-member \$200 USD**  
**Tuesday 1:30 to 4:00 pm**

This course will provide the technical manager, sales engineering, marketing staff, or other non-optics personnel with a basic understanding of the terms, specifications, and measurements used in optical technology to facilitate effective communication with optics professionals on a functional level. Topics to be covered include basic concepts such as interference, diffraction, polarization and aberrations, definitions relating to color and optical quality, and an overview of the basic measures of optical performance such as MTF and wavefront error. The material will be presented with a minimal amount of math, rather emphasizing working concepts, definitions, rules of thumb, and visual interpretation of specifications. Specific applications will include defining basic imaging needs such as magnification and depth-of-field, understanding MTF curves and interferograms, and interpreting radiometric terms.

Instructor: **Kevin Harding** has been active in the optics industry for over 30 years, and has taught machine vision and optical methods for over 25 years in over 70 workshops and tutorials, including engineering workshops on machine vision, metrology, NDT, and interferometry used by vendors and system houses to train their own engineers. He has been recognized for his leadership in optics and machine vision by the Society of Manufacturing Engineers, Automated Imaging Association, and Engineering Society of Detroit.

### Complying with the ITAR: A Case Study

**WS933 • Course level: Introductory**  
**CEU .35 Member \$325 / Non-member \$375 USD**  
**Wednesday 8:30 am to 12:30 pm**

In the world of international trade, it's what you don't know that can hurt you. With the U.S. government's focus on homeland security and its increasing reliance on photonics for the development and production of defense-related products and services, your activities may well be subject to the ITAR.

This workshop will begin with a brief contextual overview of U.S. export controls, including the Export Administration Regulations, the ITAR, and special sanction programs administered by the Treasury Department's Office of Foreign Assets Control. We will then transition into a case study focused on the ITAR. Real world situations and lessons learned will be shared. Various aspects of the case study will likely be familiar to you in the context of your own experiences, allowing you to learn effectively how to spot ITAR issues before they negatively impact your business. You will also learn about current enforcement trends and best practices for avoiding violations.

Instructor: **Kerry Scarlott** is a Director at the law firm of Goulston & Storrs. With an office in Boston, MA and Washington, D.C., Kerry focuses his practice on business law and international trade law, with particular expertise in assisting technology-based companies.

### Advanced Topics in U.S. International Trade Regulations

**NEW**

**WS1037 • Course level: Intermediate**  
**CEU .35 Member \$325 / Non-member \$375 USD**  
**Thursday 8:30 am to 12:30 pm**

U.S. businesses are subject to increasing regulatory controls on the export of their products, services and technical data, as well as their sales activities in foreign jurisdictions. Recent increases in penalty amounts and coordination among federal agencies have sharpened the ability of export enforcement authorities to target wrongdoers. These developments coincide with a dramatic up-tick in investigative and enforcement activity involving businesses of every size.

During this fast-paced program, you will be provided with cutting edge information designed to forestall enforcement activities against your company. Real world situations and lessons learned will be provided, as well as practical tips on best practices.

Instructor: **Kerry Scarlott** is a Director at the law firm of Goulston & Storrs. With an office in Boston, MA and Washington, D.C., Kerry focuses his practice on business law and international trade law, with particular expertise in assisting technology-based companies.

# Job Fair

## Two Days Only

Cypress 1 Foyer

**Tuesday 26 April · 9:30 am to 5:00 pm**

**Wednesday 27 April · 10:00 am to 5:00 pm**

Whether you are looking for a better job, re-entering the workforce or just starting your career, the SPIE Career Center and Defense, Security, and Sensing Job Fair are both great places to start!

- Meet with employers and interview on the spot
- Learn more about opportunities in our industry

Recruiters from these companies will be on hand to discuss career opportunities

Companies as of 21 March 2011

avo)photonics

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Courses at SPIE Events offer an engaging experience for those who prefer face-to-face instruction, where interaction with the instructor and sharing information with other students provide increased value.



## New and Expanded Courses for 2011:

- SC1031 **Radar Micro-Doppler Signatures - Principles and Applications** (Chen / Tamoush)
- SC1032 **Direct Detection Laser Radar Systems** (Richmond / Cain)
- SC1033 **Optical Phased Array Technologies and Systems** (Probst / McManamon)
- SC1034 **Lab-on-a-Chip Technology—Towards Portable Detection Systems** (Gärtner)
- SC1035 **Military Laser Safety** (Marshall)
- SC1036 **Diode Pumped Alkali Lasers** (Perram)
- SC755 **Infrared Optics and Zoom Lenses** (Mann)
- SC954 **Scanning Microscopy in Forensic Science** (Platek / McVicar / Trimpe / Postek)
- SC947 **Cost-Conscious Tolerancing of Optical and IR Systems** (Youngworth / Contreras)
- WS1037 **Advanced Topics in U.S. International Trade Regulations** (Scarlott)



### Continuing Education Units

SPIE has been approved as an authorized provider of CEUs by IACET, The International Association for Continuing Education and Training (Provider #1002091).

In obtaining this approval, SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

### Money-back Guarantee

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

*SPIE reserves the right to cancel courses due to insufficient pre-registration.*

## IR Sensors and Systems

- SC713 Mon **Engineering Approach to Imaging System Design** (Holst) 8:30 am to 5:30 pm, \$580 / \$670
- SC278 Mon **Infrared Detectors** (Dereniak) 8:30 am to 12:30 pm, \$435 / \$485
- SC835 Mon-Tues **Infrared Systems - Technology & Design** (Daniels) 8:30 am to 5:30 pm, \$1085 / \$1305
- SC178 Mon **Introduction to Radiometry and Photometry** (Grant) 8:30 am to 12:30 pm, \$440 / \$490
- SC900 Mon **Uncooled Thermal Imaging Detectors and Systems** (Hanson) 8:30 am to 5:30 pm, \$570 / \$660
- SC152 Mon **Infrared Focal Plane Arrays** (Dereniak, Hubbs) 1:30 to 5:30 pm, \$325 / \$375
- SC1000 Mon **Introduction to Infrared and Ultraviolet Imaging Technology** (Richards) 1:30 to 5:30 pm, \$360 / \$410
- SC944 Mon **The Radiometry Case Files** (Grant) 1:30 to 5:30 pm, \$400 / \$450
- SC950 Tues **Infrared Imaging Radiometry** (Richards) 8:30 am to 5:30 pm, \$530 / \$620
- SC892 Tues **Infrared Search and Track Systems** (Schwering) 8:30 am to 5:30 pm, \$530 / \$620
- SC214 Tues **Infrared Window and Dome Materials** (Harris) 8:30 am to 5:30 pm, \$595 / \$685
- SC181 Tues **Predicting Target Acquisition Performance of Electro-Optical Imagers** (Vollmerhausen) 8:30 am to 5:30 pm, \$570 / \$660
- SC838 Tues **Laser Range Gated Imaging Techniques** (Duncan) 1:30 to 5:30 pm, \$325 / \$375
- SC1035 Weds **Military Laser Safety** (Marshall) 8:30 am to 5:30 pm, \$530 / \$620
- SC947 Weds **Cost-Conscious Tolerancing of Optical and IR Systems** (Youngworth, Contreras) 8:30 to 5:30 pm, \$530 / \$620
- SC755 Thurs **Infrared Optics and Zoom Lenses** (Mann) 8:30 am to 12:30 pm, \$370 / \$420
- SC067 Thurs **Testing and Evaluation of E-O Imaging Systems** (Holst) 8:30 am to 5:30 pm, \$610 / \$700
- SC659 Thurs **Understanding Reflective Optical Design** (Contreras) 8:30 am to 5:30 pm, \$530 / \$620
- SC154 Fri **Electro-Optical Imaging System Performance** (Holst) 8:30 am to 5:30 pm, \$610 / \$700
- SC789 Fri **Introduction to Optical and Infrared Sensor Systems** (Shaw) 8:30 am to 5:30 pm, \$530 / \$620



## Defense, Homeland Security, and Law Enforcement

- SC719 Mon **Chemical & Biological Detection: Overview of Point and Standoff Sensing Technologies** (Gardner) 8:30 am to 12:30 pm, \$325 / \$375
- SC954 Mon **Scanning Microscopy in Forensic Science** (Platek, Trimpe, McVicar, Postek) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**
- SC1035 Weds **Military Laser Safety** (Marshall) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**
- SC952 Thurs **Applications of Detection Theory** (Carrano) 8:30 am to 5:30 pm, \$530 / \$620
- SC995 Thurs **Target Detection Algorithms for Hyperspectral Imagery** (Nasrabadi) 8:30 am to 5:30 pm, \$530 / \$620
- SC1034 Fri **Lab-on-a-Chip Technology - Towards Portable Detection Systems** (Gärtner) 8:30 am to 12:30 pm, \$325 / \$375  
**NEW**

## Imaging and Sensing

- SC713 Mon **Engineering Approach to Imaging System Design** (Holst) 8:30 am to 5:30 pm, \$580 / \$670
- SC178 Mon **Introduction to Radiometry and Photometry** (Grant) 8:30 am to 12:30 pm, \$440 / \$490
- SC1000 Mon **Introduction to Infrared and Ultraviolet Imaging Technology** (Richards) 1:30 to 5:30 pm, \$360 / \$410
- SC1031 Mon **Radar Micro-Doppler Signatures - Principles and Applications** (Chen, Tahmoush) 1:30 to 5:30 pm, \$325 / \$375  
**NEW**
- SC944 Mon **The Radiometry Case Files** (Grant) 1:30 to 5:30 pm, \$400 / \$450
- SC950 Tues **Infrared Imaging Radiometry** (Richards) 8:30 am to 5:30 pm, \$530 / \$620
- SC838 Tues **Laser Range Gated Imaging Techniques** (Duncan) 1:30 to 5:30 pm, \$325 / \$375
- SC946 Tues **Super Resolution in Imaging Systems** (Bagheri, Javidi) 8:30 to 5:30 pm, \$530 / \$620
- SC157 Weds **MTF in Optical and Electro-Optical Systems** (Ducharme) 8:30 am to 5:30 pm, \$570 / \$660
- SC194 Weds **Multispectral and Hyperspectral Image Sensors** (Lomheim) 8:30 am to 12:30 pm, \$325 / \$375
- SC947 Weds **Cost-Conscious Tolerancing of Optical and IR Systems** (Youngworth, Contreras) 8:30 to 5:30 pm, \$530 / \$620
- SC952 Thurs **Applications of Detection Theory** (Carrano) 8:30 am to 5:30 pm, \$530 / \$620
- SC1033 Thurs **Optical Phased Array Technologies and Systems** (Probst, McManamon) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**
- SC995 Thurs **Target Detection Algorithms for Hyperspectral Imagery** (Nasrabadi) 8:30 am to 5:30 pm, \$530 / \$620
- SC067 Thurs **Testing and Evaluation of E-O Imaging Systems** (Holst) 8:30 am to 5:30 pm, \$610 / \$700
- SC154 Fri **Electro-Optical Imaging System Performance** (Holst) 8:30 am to 5:30 pm, \$610 / \$700
- SC789 Fri **Introduction to Optical and Infrared Sensor Systems** (Shaw) 8:30 am to 5:30 pm, \$530 / \$620

## Laser Sensors and Systems

- SC167 Mon **Introduction to Laser Radar** (Kammerman) 8:30 am to 12:30 pm, \$325 / \$375
- SC168 Mon **Advanced Coherent Laser Radars Design and Applications** (Kammerman) 1:30 to 5:30 pm, \$325 / \$375
- SC1031 Mon **Radar Micro-Doppler Signatures - Principles and Applications** (Chen, Tahmoush) 1:30 to 5:30 pm, \$325 / \$375  
**NEW**
- SC1032 Tues **Direct Detection Laser Radar Systems for Imaging Applications** (Richmond, Cain) 8:30 am to 5:30 pm, \$575 / \$665  
**NEW**
- SC160 Tues **Precision Stabilized Pointing and Tracking Systems** (Hilkert) 8:30 am to 5:30 pm, \$530 / \$620
- SC838 Tues **Laser Range Gated Imaging Techniques** (Duncan) 1:30 to 5:30 pm, \$325 / \$375
- SC1035 Weds **Military Laser Safety** (Marshall) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**
- SC1036 Weds **Diode Pumped Alkali Lasers** (Perram) 1:30 to 5:30 pm, \$325 / \$375  
**NEW**
- SC997 Weds **High Power Laser Beam Quality** (Ross) 1:30 to 5:30 pm, \$325 / \$375
- SC947 Weds **Cost-Conscious Tolerancing of Optical and IR Systems** (Youngworth, Contreras) 8:30 to 5:30 pm, \$530 / \$620
- SC188 Thurs **Laser Beam Propagation for Applications in Laser Communications, Laser Radar, and Active Imaging** (Phillips, Andrews) 8:30 am to 5:30 pm, \$660 / \$750
- SC1033 Thurs **Optical Phased Array Technologies and Systems** (Probst, McManamon) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**
- SC995 Thurs **Target Detection Algorithms for Hyperspectral Imagery** (Nasrabadi) 8:30 am to 5:30 pm, \$530 / \$620

## Sensor Data and Information Exploitation

- SC1031 Mon **Radar Micro-Doppler Signatures - Principles and Applications** (Chen, Tahmoush) 1:30 to 5:30 pm, \$325 / \$375  
**NEW**
- SC994 Tues **Multisensor Data Fusion for Object Detection, Classification and Identification** (Klein) 8:30 am to 5:30 pm, \$600 / \$690
- SC181 Tues **Predicting Target Acquisition Performance of Electro-Optical Imagers** (Vollmerhausen) 8:30 am to 5:30 pm, \$570 / \$660
- SC1035 Weds **Military Laser Safety** (Marshall) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**
- SC194 Weds **Multispectral and Hyperspectral Image Sensors** (Lomheim) 8:30 am to 12:30 pm, \$325 / \$375
- SC158 Thurs **Fundamentals of Automatic Target Recognition** (Sadjadi) 8:30 am to 5:30 pm, \$530 / \$620
- SC995 Thurs **Target Detection Algorithms for Hyperspectral Imagery** (Nasrabadi) 8:30 am to 5:30 pm, \$530 / \$620

## Signal, Image, and Neural Net Processing

- SC066 Mon **Fundamentals of Electronic Image Processing** (Weeks) 8:30 am to 5:30 pm, \$600 / \$690
- SC994 Tues **Multisensor Data Fusion for Object Detection, Classification and Identification** (Klein) 8:30 am to 5:30 pm, \$600 / \$690
- SC946 Tues **Super Resolution in Imaging Systems** (Bagheri, Javidi) 8:30 to 5:30 pm, \$530 / \$620
- SC952 Thurs **Applications of Detection Theory** (Carrano) 8:30 am to 5:30 pm, \$530 / \$620
- SC995 Thurs **Target Detection Algorithms for Hyperspectral Imagery** (Nasrabadi) 8:30 am to 5:30 pm, \$530 / \$620

**Make SPIE your resource.  
Register for a course today**

See SPIE Cashier to register.

## Sensing for Industry, Environment, and Health

- SC719 Mon **Chemical & Biological Detection: Overview of Point and Standoff Sensing Technologies** (*Gardner*) 8:30 am to 12:30 pm, \$325 / \$375
- SC952 Thurs **Applications of Detection Theory** (*Carrano*) 8:30 am to 5:30 pm, \$530 / \$620
- SC995 Thurs **Target Detection Algorithms for Hyperspectral Imagery** (*Nasrabad*) 8:30 am to 5:30 pm, \$530 / \$620
- SC1034 Fri **Lab-on-a-Chip Technology - Towards Portable Detection Systems** (*Gärtner*) 8:30 am to 12:30 pm, \$325 / \$375  
**NEW**

## Information Systems and Networks: Processing, Fusion, and Knowledge Generation

- SC994 Tues **Multisensor Data Fusion for Object Detection, Classification and Identification** (*Klein*) 8:30 am to 5:30 pm, \$600 / \$690
- SC952 Thurs **Applications of Detection Theory** (*Carrano*) 8:30 am to 5:30 pm, \$530 / \$620

## Innovative Defense and Security Applications for Displays

- SC159 Weds **Head-Mounted Displays: Design and Applications** (*Melzer, Browne*) 8:30 am to 5:30 pm, \$565 / \$655

## Unmanned, Robotic, and Layered Systems

- SC996 Weds **Introduction to GPS Receivers** (*Zhu*) 8:30 am to 12:30 pm, \$325 / \$375
- SC549 Weds **Incorporating GPS Technology into Commercial and Military Applications** (*Zhu*) 1:30 to 5:30 pm, \$325 / \$375
- SC952 Thurs **Applications of Detection Theory** (*Carrano*) 8:30 am to 5:30 pm, \$530 / \$620

## Emerging Technologies

- SC1034 Fri **Lab-on-a-Chip Technology - Towards Portable Detection Systems** (*Gärtner*) 8:30 am to 12:30 pm, \$325 / \$375  
**NEW**

## Scanning Microscopy and Forensics

- SC954 Mon **Scanning Microscopy in Forensic Science** (*Platek, Trimpe, McVicar, Postek*) 8:30 am to 5:30 pm, \$530 / \$620  
**NEW**



## Optical and Optomechanical Engineering

- SC156 Mon **Basic Optics for Engineers** (*Ducharme*) 8:30 am to 5:30 pm, \$570 / \$660
- SC010 Mon-Tues **Introduction to Optical Alignment Techniques** (*Ruda*) 8:30 am to 5:30 pm, \$940 / \$1160
- SC178 Mon **Introduction to Radiometry and Photometry** (*Grant*) 8:30 am to 12:30 pm, \$440 / \$490
- SC1000 Mon **Introduction to Infrared and Ultraviolet Imaging Technology** (*Richards*) 1:30 to 5:30 pm, \$360 / \$410
- SC944 Mon **The Radiometry Case Files** (*Grant*) 1:30 to 5:30 pm, \$400 / \$450
- SC950 Tues **Infrared Imaging Radiometry** (*Richards*) 8:30 am to 5:30 pm, \$530 / \$620
- WS609 Tues **Basic Optics for Non-Optics Personnel** (*Harding*) 1:30 to 4:00 pm, \$150 / \$200
- SC014 Weds-Thurs **Introduction to Optomechanical Design** (*Vukobratovich*) 8:30 am to 5:30 pm, \$940 / \$1160
- SC220 Weds **Optical Alignment Mechanisms** (*Guyer*) 8:30 am to 12:30 pm, \$325 / \$375
- SC781 Weds **Optomechanical Analysis** (*Hatheway*) 8:30 am to 5:30 pm, \$530 / \$620
- SC947 Weds **Cost-Conscious Tolerancing of Optical and IR Systems** (*Youngworth, Contreras*) 8:30 to 5:30 pm, \$530 / \$620
- SC755 Thurs **Infrared Optics and Zoom Lenses** (*Mann*) 8:30 am to 12:30 pm, \$370 / \$420  
**NEW**
- SC254 Thurs **Integrated Opto-Mechanical Analysis** (*Genberg, Doyle*) 8:30 am to 5:30 pm, \$580 / \$670
- SC659 Thurs **Understanding Reflective Optical Design** (*Contreras*) 8:30 am to 5:30 pm, \$530 / \$620

## INDUSTRY WORKSHOPS

### Business & Professional Development

- WS933 Weds **Complying with the ITAR: A Case Study** (*Scarlott*) 8:30 am to 12:30 pm, \$325 / \$375
- WS1037 Thurs **Advanced Topics in U.S. International Trade Regulations** (*Scarlott*) 8:30 am to 12:30 pm, \$325 / \$375  
**NEW**
- WS951 Tues **Leading Successful Product Innovation** (*Carrano*) 8:30 am to 12:30 pm, \$325 / \$375
- WS609 Tues **Basic Optics for Non-Optics Personnel** (*Harding*) 1:30 to 4:00 pm, \$150 / \$200

## Registration Required

See SPIE Cashier.



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# Exhibitor Product Demonstrations

Location: Cypress 2 Foyer

Product Demonstrations are open to all attendees. Exhibiting companies will showcase new and successful products in half-hour demonstrations.

**Open to All Attendees – FREE**

Exhibition visitors, exhibitors, and technical conference Attendees



| TIME     | Tuesday 26 April   | Wednesday 27 April   | Thursday 28 April  |
|----------|--|--|--|
| 10:30 am | <p><b>29 Million Pixel Camera for ISR and Persistent Surveillance</b><br/> <b>Kris Balch</b>, Vision Systems Technology, LLC</p> <p>Vieworks launches the world's highest resolution interline transfer CCD, the VA-29MC. The camera features a 29 million pixel CCD, electronic shutter, 5 FPS readout, and excellent sensitivity.</p>          | <p><b>Mini Linear Coolers with Cooler Diagnostic Software</b><br/> <b>Hans van der Weijden</b>, Thales Cryogenics B.V.</p> <p>Optimization of cameras operational life time by cooler performance analysis. Thales Cooler Diagnostic Software demonstrated with the new small linear cooler.</p> | <p><b>Infrared Material Production by SCHOTT North America</b><br/> <b>Dr. Heather Rayle</b>, SCHOTT North America, Inc.</p> <p>SCHOTT has invested in a production line for manufacturing of the IG series of chalcogenide glasses at its Duryea, PA facility, meeting the domestic production requirements of our defense customers.</p> |
| 11:30 am | <p><b>Nucless or Less Nuc for Opgals' Uncooled Products</b><br/> <b>Shai Fishbain</b>, Opgal Ltd.</p> <p>Opgal's vast experience in uncooled products and external influences to image qualities enabled development of eliminating or reducing necessity of NUC mechanism according to customer application.</p>                                | <p><b>SWIR and LWIR Image Fusion with OEM Engines for Night Vision</b><br/> <b>Koen Jacobs</b>, Xenics</p> <p>SWIR and LWIR with OEM engines for night vision.</p>   | <p><b>Matrox Supersight: High-Performance Computing Platform</b><br/> <b>Michael Chee/Jorge Chang</b>, Matrox Imaging</p> <p>Matrox Supersight provides an environment for considerable data and task-level parallel processing through the interconnection of CPUs, GPUs and FPGAs using a unique PCIe® switched fabric.</p>              |
| 12:30 pm | <p><b>ADEPT3000 Ultra Compact Video Tracker</b><br/> <b>Chris Jobling</b>, GE Intelligent Platforms, Applied Image Processing</p> <p>The ADEPT3000 is an ultra compact image processing module designed for SWaP optimized embedded applications ideal for installation within electro optic sensors, miniature gimbals and imaging seekers.</p> | <p><b>"I Can See Clearly Now"</b><br/> <b>Arnold Kravitz</b>, SRI International Sarnoff</p> <p>The VerifIR™ is a non-invasive stand-off detection system that displays real-time visible/IR fused footage as subjects wander in crowds or hide in vegetation and alleys.</p>                     |  |

## Promotional Partners

Carl Hanser Verlag  
 C4ISR Journal  
 Defense Tech Briefs  
 Electro Optics Magazine  
 Laser Focus World  
 Military & Aerospace Electronics

OpticalFiberSensors.org  
 Optics.org  
 Optronics Co. Ltd (The)  
 Photonics Media  
 Photonics Online  
 Physics Today

Pollution Equipment News  
 Spectroscopy Magazine  
 The Shephard Group  
 Vision Systems Design

# Exhibitor Product Demonstrations

| TIME    | Tuesday 26 April   | Wednesday 27 April  | Thursday 28 April |
|---------|--|---|-------------------|
| 1:30 pm | <p><b>Transitioning from Standard Video to HD</b><br/> <b>Ruben Uribe</b>, Physimetrics, Inc.<br/>                     Many applications use analog video. Current digital video out performs these but transitioning to HD can be a difficult task. What are the roadblocks associated with transitioning to HD video.</p>              | <p><b>SuperBand Optic</b><br/> <b>Jennifer Myers</b>, StingRay Optics<br/>                     StingRay will debut a SuperBand Optic™ with multiple detector types to demonstrate feasibility of a single achromatically corrected lens solution for use in multispectral or image fusion applications.</p>   |                   |
| 2:30 pm | <p><b>Digital HD Rugged Cameras for Enhanced Defense Vision</b><br/> <b>Marcel Dijkema</b>, Adimec<br/>                     Innovative camera solutions from Adimec allow you to upgrade your existing defense vision systems to digital HD, benefiting from the latest developments in sensor, processing and interface technology.</p> | <p><b>Optikos LensCheck™</b><br/> <b>Daniel Orband</b>, Optikos Corporation<br/>                     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>  | EXHIBITION CLOSED |
| 3:30 pm | <p><b>High Performance Coated Components from SCHOTT</b><br/> <b>Dr. Angela Hohl-AbiChedid</b>, SCHOTT North America, Inc.<br/>                     SCHOTT has further enlarged its capability and capacity in producing coated optical components manufactured in-house based on SCHOTT materials.</p>                                  | <p><b>Controlled Illumination Fiber Optic Filter for Defined Light Signature with Digital Displays</b><br/> <b>Ann Kutsch</b>, SCHOTT North America, Inc. - Defense<br/>                     Specially designed fiber optic windows can provide an optical cut-off for digital displays. By varying the numerical aperture of the window, a specified viewing angle can be presented to the viewer.</p> | EXHIBITION CLOSED |
| 4:30 pm | <p><b>Night Vision CMOS</b><br/> <b>Tom Vogelsong</b>, SRI International Sarnoff<br/>                     Our Low Light CMOS image sensor technology features high sensitivity backside illumination, on-chip ADCs, and low noise, dark current &amp; power consumption.</p>   | <p><b>“Shake, Rattle and Roll” Electronic Video Stabilization</b><br/> <b>Arnold Kravitz</b>, SRI International Sarnoff<br/>                     The newest addition to the Acadia®: Video Processing family, the ILS-6000 in – line stabilizer is a weatherproof, high performance, image stabilizer, at a cost that enables wide-spread implementation.</p>   | EXHIBITION CLOSED |

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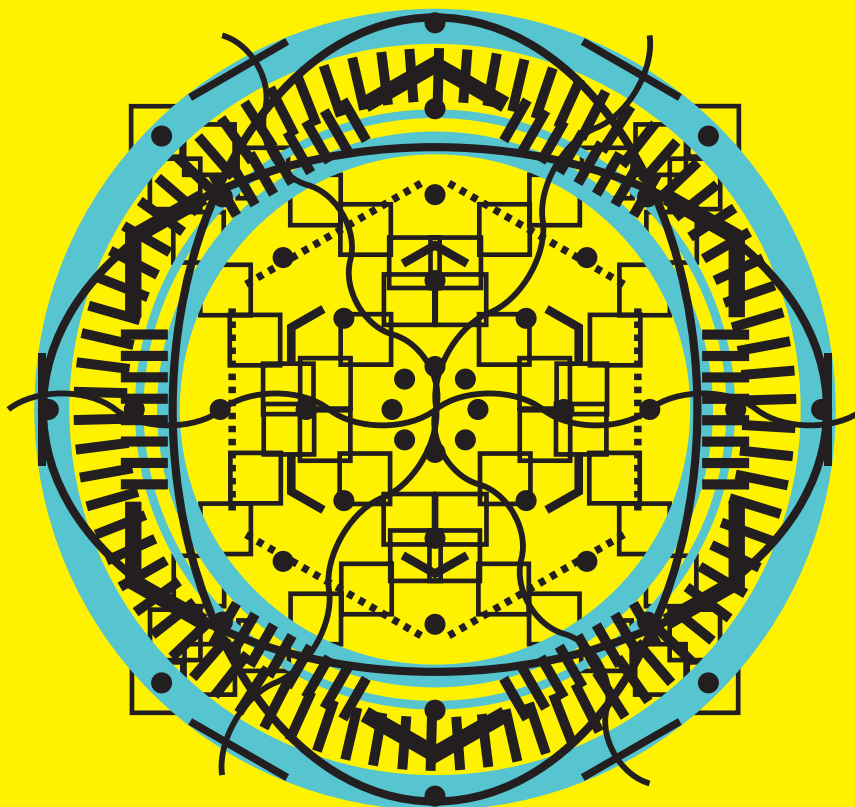
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Wednesday 27 April . . . . . 10:00 am to 5:00 pm  
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SPIE Defense, Security, and Sensing exhibitors are indexed by booth number on pages 30–35, then listed in alphabetical order with details about products or services each is exhibiting. Booth numbers may be cross-referenced with the maps on pp. 28–29.

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# Palms Exhibition Hall

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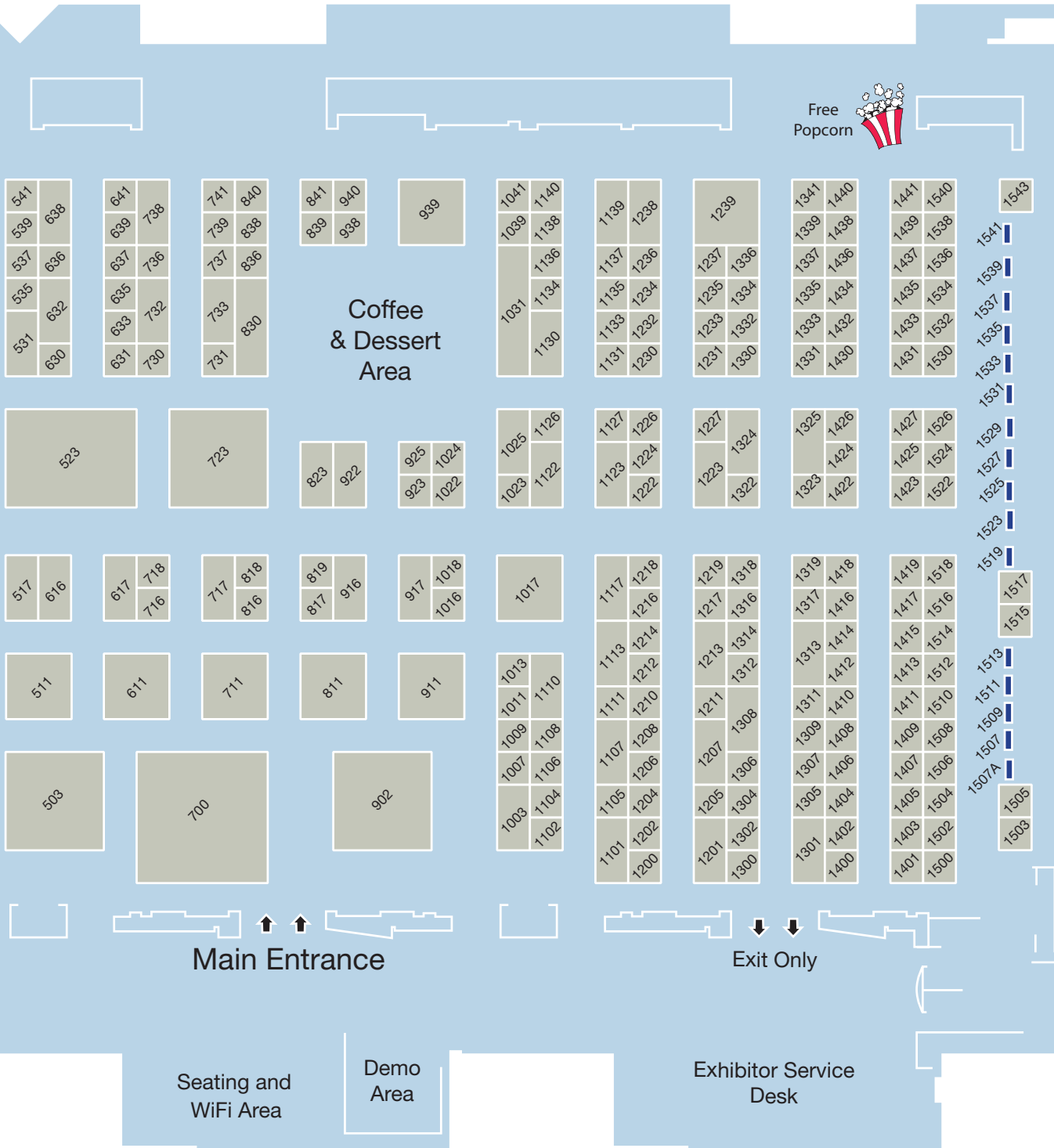
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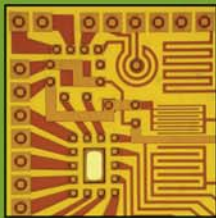


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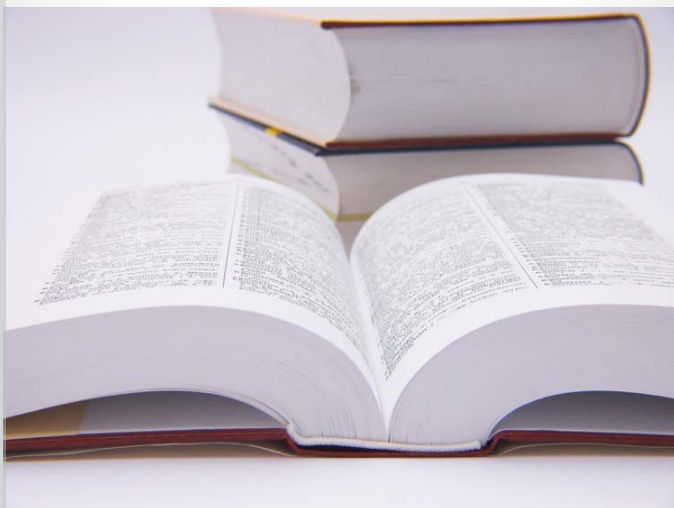
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sales@2d3.com; www.2d3.com

**#1524**

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+1 520 294 5600; fax +1 520 294 5601  
info@4dtechnology.com; www.4dtechnology.com

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**#1039**

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**#1307**

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ftir@ca.abb.com; www.abb.com/analytical

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**#617**

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200 S Hallock Dr, Santa Paula, CA, 93060  
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**#1309**

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**#730**

479 Jumpers Hole Rd Ste 301, Severna Park, MD, 21146  
+1 410 696 7642; fax +1 410 696 7643  
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**#3103**

640 Alpha Dr, Pittsburgh, PA, 15238  
+1 412 963 9400; fax +1 412 963 0816  
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**#1131**

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contact\_adsys@AdsysControls.com; www.adsyscontrols.com

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**#3005**

**AdTech Optics, Inc.**

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18007 Cortney Ct, City of Industry, CA, 91748  
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sales@atoptics.com; www.atoptics.com

#3924

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#3505

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#1425

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1046 New Holland Ave, Lancaster, PA, 17601  
+1 717 295 6061; fax +1 717 295 6064  
www.1-act.com

#535

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**Advanced Laser Diode Systems****A.L.S. GmbH**

#736

Schwarzschildstr 6, Photonic Center, Berlin, Germany, 12489  
+49 30 6392 6522; fax +49 30 6392 6521  
info@alsgmbh.de; www.alsgmbh.de

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**Advanced Plasmonics**

#1433

3239 SW 47th Ave, Ste. 200, Gainesville, FL, 32608  
352 284 0440; fax 352 272 7609  
jtokarz@aplasmonics.com; apasmonics.com

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#1333

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**Advanced Scientific Concepts, Inc.**

#3309

135 E Ortega St, Santa Barbara, CA, 93101  
+1 805 966 3331; fax +1 805 966 0059  
info@asc3d.com; www.asc3d.com

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## AGM Container Controls, Inc. #541

3526 E Fort Lowell Rd, Tucson, AZ, 85716  
+1 520 881 2130; fax +1 520 881 4983  
sales@agmcontainer.com; www.agmcontainer.com

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## AIM INFRAROT-MODULE GmbH #1025

Theresienstr 2, Heilbronn, Germany, 74072  
+49 7131 6212 0; fax +49 7131 6212 929  
info@aim-ir.com; www.aim-ir.de

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## Allied Vision Technologies Inc. #1430

38 Washington St, Newburyport, MA, 01950  
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info@alliedvisiontec.com; www.alliedvisiontec.com

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## Alpes Lasers SA #317

1-3 Max.-de-Meuron, Neuchâtel, Switzerland, 2000  
+41 3272 99510; fax +41-3272 13619  
info@alpeslasers.ch; www.alpeslasers.ch

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## Alternative Vision Corp. #1503

SPIE Corporate Member

4729 E. Sunrise Drive #331, Tucson, AZ, 85718  
+1 520 615 4073; fax +1 520 844 6332  
info@alt-vision.com; www.alt-vision.com

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## American Diamond Turning #209

30 Nashua St, Woburn, MA, 01801-4565  
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**American Photonics****#1522**

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+1 941 752 5811; fax +1 941 752 5861  
sales@americanphotonics.com; www.americanphotonics.com

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**AMETEK HCC Inc.****#3200**

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+1 626 443 8931  
www.hccindustries.com

Leader in the design/manufacture of high reliability hermetic micro-electronic packages, headers & lids. Sealing/Insulation technology can be either Glass to Metal or Ceramic to Metal. Packages support many applications: Infrared, Hybrid Microprocessor & Optical Networking Components. Lids & Lids with Windows (metallized & A/R coated) are also offered. Capabilities: Custom design engineering, prototyping & high volume production. Businesses: HCC Aegis, Glasseal Products & General Ceramics. Contact: Keith Barclay, VP of Sales & Marketing, keith.barclay@ametek.com.

**Ampex Data Systems Corp.****#817**

**SPIE** Corporate Member

500 Broadway, Redwood City, CA, 94063  
+1 650 367 3365  
www.ampex.com

**Featured Product: IRIG106-09 Chap 10 Solid State Recorder, miniR700, on Eglin AFB Airborne Recorder IDIQ Contract.**

Ampex Data Systems manufactures airborne and ground based systems. Our product line features a variety of harsh environment solid state recording units and multi-channel Hi-Def video and data format interfaces for both traditional instrumentation and New File Server systems. If you have read this description come talk to us in Booth 817 and get your free Ampex T-Shirt. Ampex products are designed and manufactured in the U.S.A. Contact: Don Downing, Business Development Manager, don\_downing@ampex.com; Linda Nuti, Contracts Manager, linda\_nuti@ampex.com.

**Analog Modules, Inc.****#423**

126 Baywood Ave, Longwood, FL, 32750  
+1 407 339 4355; fax +1 407 834 3806  
ami@analogmodules.com; www.analogmodules.com

**Featured Product: Handheld Binocular Laser Spot Tracker with Night Vision Capability.**

Analog Modules is an ISO 9001 certified company where 65 full-time employees are involved in design, development and manufacturing. AMI produces a wide range of standalone and OEM analog electronic products primarily for the laser and electro-optics industries. These products serve applications in medical, military, scientific and industrial markets. Contact: Kelly Pacy, V.P. Sales, kpacy@analogmodules.com; Tim Cable, Product Support Engineer, tcable@analogmodules.com.

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**Andover Corp.****#522**

**SPIE** Corporate Member

4 Commercial Dr, Salem, NH, 03079  
+1 603 893 6888; fax +1 603 893 6508  
info@andovercorp.com; www.andovercorp.com

Andover manufactures high-quality custom optical coatings in the UV to Mid IR range. Substrate materials include Germanium, Silicon, Zinc Selenide, Zinc Sulfide, Sapphire, Fused Silica and Calcium Fluoride. We are ITAR and AS9100 registered. Contact: Phil Clark, Technical Sales, pclark@andovercorp.com; Rob Pursel, Sr. Optical Coating Engineer, rpursel@andovercorp.com.

**Angstrom Precision Optics****#3908**

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

**Featured Product: APO is pleased to announce our new plano germanium and silicon window products.**

Manufacturer of plano components. Windows, wedges, filters, mirrors and post fabrication of coated optics for UV, VIS and IR applications. 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.

**Anoplate Corp.****#314**

459 Pulaski St, Syracuse, NY, 13204  
+1 315 471 6143  
sales@anoplate.com; www.anoplate.com

**Featured Product: AnoBlackEC two-step electrolytic blackening using inorganic metallic salts in lieu of organic dyes.**

Providing metal finishing services to industry since 1960. As a partner in your design process, we understand the important aspect of surface engineering as it relates to: corrosion resistance, wear resistance, friction reduction, light reflection, joinability, aesthetics and surface preparation. Whether you have routine plating or complex finishing requirements, our staff of over 200 can help devise a customized coating suited to your particular application and delivery when you need it. Contact: Mike Cole, Sales Engineer, mcole@anoplate.com; Dave Edmonds, Sales Engineer, dedmonds@anoplate.com.

**Aperture Optical Sciences Inc.****#105**

**SPIE** Corporate Member

27 Parson Ln, Durham, CT, 06422  
+1 860 316 2589; fax +1 860 760 6564  
ftinker@apertureos.com; www.apertureos.com

**Featured Product: SiC precision optics, off-axis parabolas, general aspheres and freeforms of glass and SiC materials.**

Aperture Optical Sciences Inc. provides some of the most demanding custom precision optics and systems made in the world today. We develop and employ advanced technology for making aspheric mirrors and lenses, SiC optics, optics for high energy lasers and engage in developmental processes of advanced materials. Contact: Flemming Tinker, President, ftinker@apertureos.com; Kai Xin PhD, VP, CTO, kxin@apertureos.com.

# Exhibitor Directory

## Apple Rubber Products, Inc.

#1530

310 Erie St, Lancaster, NY, 14086  
+1 716 684 6560; fax +1 716 684 8302  
www.applerrubber.com

**Featured Product: O rings & Custom Molded rubber parts, including rubber bonded to plastic, metal or filter material.**

Manufacturer of elastomeric parts. These include O-Rings from microminiature, to macro as well as AS568 and metric. We design and manufacture custom parts including rubber bonded to plastic, metal and filter materials. Services include engineering assistance & QC testing & reporting. We are ISO 9001-200 and 9100B registered and have a class 10,000 clean room. Contact: Dan Goehle, Account Executive, dang@applerrubber.com.

## APPLIED IMAGE Inc.

#222

**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

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## Applied Technology Associates

#732

**SPIE** Corporate Member

1300 Britt St SE, Albuquerque, NM, 87123  
+1 505 767 1200; fax +1 505 768 1379  
contactata@aptec.com; www.aptec.com

ATA is a precision measurement, sensing and controls company that offers engineering services and custom solutions to government, aerospace and commercial customers. ATA develops angular rate sensors, actuators, and inertial subsystems used in aerospace controls, inertial navigation, platform stabilization, vibration and motion measurement, and line-of-sight imaging systems. Our services and products span space, air and ground applications. ATA also provides integration and test capabilities.

## Arrow Thin Films, Inc.

#3904

465 West Main St Ste 2, Wyckoff, NJ, 07481  
+1 201 977 1073; fax +1 201 839 1007  
jon.herringer@arrow-otf.com; www.arrow-otf.com

Providing solutions, hitting your targets. Arrow can provide solutions for demanding industry applications from the UV to the LWIR. Including, coatings for custom optics, laser crystals and non-linear optical materials. Contact: Jon Herringer, President, Jon.Herringer@arrow-otf.com.

## ARS Technical Sales Corp

#3007

**SPIE** Corporate Member

6 Barbara Dr, Warwick, NY, 10990  
+1 845 544 7055; fax +1 845 544 7054  
info@arstechsales.com; www.arstechsales.com

A Manufacturer's Representative specializing in fixed-mount Infrared Cameras from DIAS Infrared Systems, precision digitizers from Agilent Technologies and Elsys Instruments, and rugged IP-54 sealed computer systems with integrated GPU processors from Vision4ce. We address all markets from applied research to OEM in Aerospace Defense and commercial sectors. Contact: Philip Gregor, President, phil\_gregor@arstechsales.com.

## ARTEMIS, Inc.

#3302

36 Central Ave, Hauppauge, NY, 11788  
+1 631 232 2424; fax +1 419 858 5319  
yuly@artemisinc.net; www.artemisinc.net

## ASD Inc.

#819

**SPIE** Corporate Member

2555 55th St Ste 100, Boulder, CO, 80301  
+1 303 444 6522; fax +1 303 444 6825  
info@asdi.com; www.asdi.com

**Featured Product: New! FieldSpec HandHeld 2 spectroradiometer - Portable, self-contained data collection. 325-1075 nm.**

ASD Inc. is a recognized world leader in reflectance spectroscopy for remote sensing. Researchers across the globe trust our instruments because they are portable, easy to use, and rugged – and, most importantly, provide research-critical measurements in the field. For an instrument that provides the freedom to rapidly collect spectra in the field, choose ASD. Our extensive line of FieldSpec® instruments and accessories can be adapted for unique field research needs. Learn more at asdi.com. Contact: Nate Bloomingdale, Technical Sales, nate.bloomingdale@asdi.com; David Hatchell, Remote Sensing Manager, david.hatchell@asdi.com.

## ASE Optics, Inc.

#210

850 John St, West Henrietta, NY, 14586  
+1 585 303 1574; fax +1 585 624 8083  
sales@aseoptics.com; www.aseoptics.com

Engineering talent for world-class optical systems. Whether you need to add specialized expertise to your engineering team, determine feasibility, or break through a design challenge, ASE Optics can help. Our highly skilled PhD, MS, and BS level engineers bring extensive experience and knowledge of both theoretical and applied systems. Our fixed price discovery service is a great way to define the problem or jumpstart development. Contact: Chris Cotton, President, chris@aseoptics.com; Wade Cook, wadec@aseoptics.com.

## Avantes, Inc.

#115

**SPIE** Corporate Member

9769 W 119th Dr, Broomfield, CO, 80021  
+1 303 410 8668; fax +1 303 410 8669  
infousa@avantes.com; www.avantes.com

**Featured Product: AvaSpec-Nirline Spectrometers (1000-2500 nm). AvaSpec-Sensline High Sensitivity Spectrometers.**

Avantes is a leading manufacturer of fiber optic spectroscopy instruments and systems with almost two decades of experience developing customer-defined spectrometer configurations. With a long history of consulting with clients across diverse industries and applications, Avantes is an experienced partner, equipped to guide customers who seek a solution tailored to their application needs. Visit us at www.avantes.com. Contact: Damon Lenski, Sales Manager, damonl@avantes.com; Paul Murphy, Sales Applications Engineer, paulm@avantes.com.

## Avo Photonics, Inc.

#416

**SPIE** Corporate Member

700 Business Center Dr Ste 125, Horsham, PA, 19044  
+1 215 441 0107; fax +1 215 441 9219  
sales@avophotonics.com; www.avophotonics.com

Avo Photonics provides custom design and contract manufacturing of opto-electronic components and assemblies. Avo's unique pure service model supports customers in the military, medical, communication, and commercial markets. Contact: Chelsea L. Ferruzzi, Executive Sales Assistant, cferruzzi@avophotonics.com.



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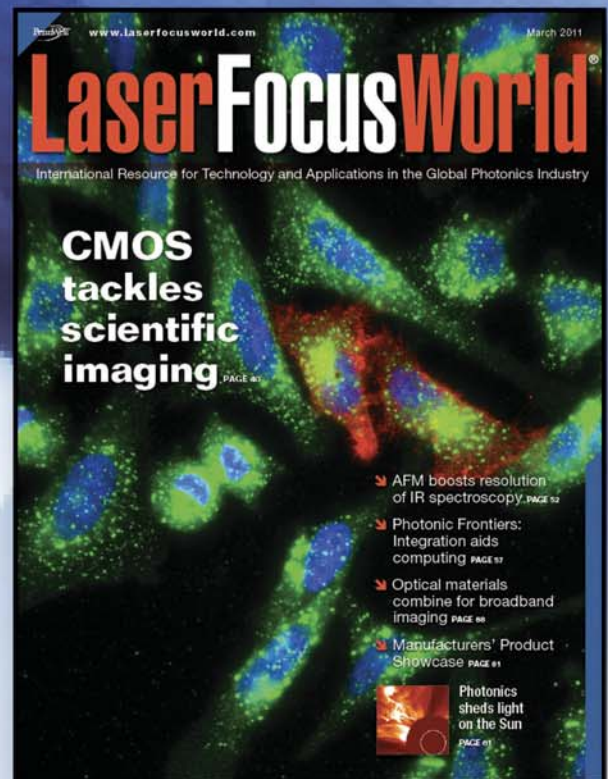
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**SPIE** Corporate Member

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+1 603 864 6300; fax +1 603 864 6450  
www.axsys.com

Axsys Technologies, a division of General Dynamics Advanced Information Systems, delivers high-performance optical solutions that provide superior thermal imaging for targeting, navigation and surveillance missions. We offer solutions and services for applications that demand the most stringent optical requirements including fast steering mirrors, precision machined products and integrated optical lens assemblies. Contact: Susan Benz, Business Development Sales Manager, sbenz@axsys.com; David B. Enos, V.P. Programs & Business Development, denos@axsys.com.

## **Barr Associates, Inc.** #3601 *see Materion Corporation*

## **Basler Vision Technologies** #1130

855 Springdale Dr Ste 203, Exton, PA, 19341  
+1 610 280 0171; fax +1 610 280 7608  
russ.seery@baslerweb.com; www.baslerweb.com

## **BEI Precision Systems & Space Co.** #244

1100 Murphy Dr, Maumelle, AR, 72113  
+1 501 851 4000; fax +1 501 851 5476  
sales@beiprecision.com; www.beiprecision.com

**Featured Product: Nano-Series Optical Encoders.**

Contact: Mark Madsen, Business Development Manager, mmadsen@beiprecision.com

## **Block MEMS/Engineering** #3012

377 Simarano Dr, Marlborough, MA, 01752  
+1 508 251 3100  
adam.erlich@blockeng.com; www.blockeng.com

**Featured Product: LaserScan is a standoff mid-infrared spectrometer that can analyze samples from inches to feet away.**

For over 50 years, Block Engineering has pioneered revolutionary instruments for chemical imaging and detection of gases liquids, and solids. Our next generation mid-infrared spectrometers, based on Quantum Cascade Lasers, offer unparalleled sensitivity, speed, and versatility. Our passive FTIR sensors are used to detect chemical weapons plumes from 2-3 miles away. Contact: Adam Erlich, VP Marketing & Business Development, adam.erlich@blockeng.com; Petros Kotidis, CEO, petros.kotidis@blockeng.com.

## **Bodkin Design & Engineering, LLC** #836

**SPIE** Corporate Member

77 Oak St, Newton, MA, 02464  
+1 617 795 1968; fax +1 617 795 1969  
info@bodkindesign.com; www.bodkindesign.com

Since 1992, Bodkin Design & Engineering has provided product development, innovation, and engineering services to the industrial, commercial, military, and research communities. BD&E offers a broad range of products that incorporate cutting-edge technologies and has secured numerous industry patents for its clients. These system-level solutions draw on our expertise in optics, electro-optics, opto-mechanics, mechanical engineering, physics, hyperspectral imagery, polarimetry. Contact: Andrew Bodkin, Principal, wab@bodkindesign.com.

## **Boston Electronics Corp.** #317

**SPIE** Corporate Member

91 Boylston St, Brookline, MA, 02445  
+1 617 566 3821; fax +1 617 731 0935  
boselec@boselec.com; www.boselec.com

**Featured Product: DIRT CHEAP IR FOCAL PLANE!**

Specialists in Quantum Cascade Lasers, UV and IR linear photodetectors, photon counting detectors, thermal sources and signal processing electronics. Contact: Fred Perry, fsp@boselec.com.

## **Boulder Imaging Inc.** #1130

**SPIE** Corporate Member

1500 Cherry St Ste C, Louisville, CO, 80027  
+1 303 604 2368; fax +1 720 890 7731  
info@boulderimaging.com; www.boulderimaging.com

**Featured Product: Quazar High Performance Digital Video Recorder & our Vision Inspector machine vision solutions.**

Boulder Imaging Inc. is a worldwide leader in vision inspection. We provide solutions for 100% inspection, measurement, and monitoring for high-speed, high-performance, and precision manufacturing and engineering across all industries. Our expertise and tools for machine vision applications optimize product quality, drive down manufacturing costs, and measurably improve efficiency. Contact: Jim Wineberg, Eastern Regional Sales Director, jwineberg@boulderimaging.com; Jeff Hildebrandt, Western Regional Sales Director, jhildebrandt@boulderimaging.com.

## **Boulder Imaging Inc. - Display** #3719

**SPIE** Corporate Member

1500 Cherry St Ste C, Louisville, CO, 80027  
+1 303 604 2368; fax +1 720 890 7731  
info@boulderimaging.com; www.boulderimaging.com

## **Boulder Nonlinear Systems, Inc.** #1208

**SPIE** Corporate Member

450 Courtney Way Unit 107, Lafayette, CO, 80026  
+1 303 604 0077; fax +1 303 604 0066  
sales@bnonlinear.com; www.bnonlinear.com

## **Brandywine Photonics** #1402

**SPIE** Corporate Member

748 Springdale Dr. Ste. 125, Exton, PA, 19341-2808  
+1 484 458 9589; fax +1 484 214 0247  
jfisher@brandywinephotonics.com;  
www.brandywinephotonics.com

**Featured Product: NEW Compact Hyperspectral Advanced Imager for VNIR, SWIR, and LWIR, NEW FBX-2 CMOS Imager.**

Brandywine designs and manufacturers hyperspectral and multi-spectral instrument payloads for Airborne Science and ISR. Contact: John Fisher, Business Development, jfisher@brandywinephotonics.com; Dan Guerin, Sr. Scientist, dguerin@brandywinephotonics.com.

**Brimrose Technology Corp. #1232**

19 Loveton Circle, Hunt Valley Loveton Ctr, Sparks, MD, 21152  
+1 410 472 2600; fax +1 410 472 7950  
rrose@brimrose.com; www.brimrose.com

**Featured Product: Passive IR UGS: SPOT (Silhouette Profiling Optical Tripwire) and AOTF SWIR Hyperspectral Imager.**

Brimrose Technology a Baltimore based Electro-Optics Company specializes in ruggedized, small, low power, military imaging equipment. Two major products will be demonstrated on site: (a) Low Cost, Low Power, Text Picture Message Capable, Passive IR UGS: SPOT (Silhouette Profiling Optical Tripwire) and (b) Hand Held, Light Weight, Low Power, AOTF SWIR Hyperspectral Imager. Contact: Dr. Jolanta I. Soos, CTO, jsoos@brimrosetechnology.com; Dr. R.G. Rosemeier, CEO, rrose@brimrosetechnology.com.

**Brush Wellman, Inc. #3601**  
*see Materion Corporation***PROMOTIONAL PARTNER****C4ISR Journal & Defense News #L4, 102**

6883 Commercial Drive, Springfield, VA, 22159  
+1 703 75 9000; fax +1 703 642 7325  
cust-svc@atpco.com; http://www.c4isrjournal.com

**CALCULEX, Inc. #213**

132 W Las Cruces Ave, Las Cruces, NM, 88001  
+1 575 525 0131; fax +1 575 524 4744  
www.calculex.com

CALCULEX designs and manufactures the MONSSTR family of solid state recorders feature a wide range of built-in multiplexer options that are compliant with IRIG 106 Chapter 10 standards. Interfaces include Standard Resolution video, High Definition video, Fibre Channel, GigE, PCM, and MIL-STD-1553. Customers for MONSSTR include the 46th Test Wing at Eglin AFB, FL; Lockheed Martin, Orlando, FL; Boeing, St. Louis, MO, Edwards AFB, CA; US Navy, Patuxent River, MD, and many others. Contact: Bill Taylor, National Sales Manager, billt@calculex.com.

**CalSensors, Inc. #3319**

5460 Skylane Blvd., Santa Rosa, CA, 94503  
+1 707 545 4181  
info@calsensors.com; www.calsensors.com

**Cantronic Systems, Inc. #1111**

63A Clipper St, Coquitlam, BC, Canada, V3K 6X2  
+1 604 516 6667; fax +1 604 516 6618  
info@cantronics.com; www.cantronic.com

**Featured Product: TR4700-C600 - A high performance cooled thermal imager optimized for long-range surveillance.**

Cantronic Systems Inc. is a global technology leader in infrared thermal imaging and night vision systems. Cantronic manufactures and distributes active and passive CCTV infrared imaging and night vision cameras. These complex camera systems are used for monitoring, protecting and managing facilities and people. Cantronic has supplied systems for use in demanding military, homeland security, and industrial applications. Contact: Darren Calverley, Senior Sales Consultant, dcalverley@cantronics.com; Frank Fei, Regional Sales Manager, ffei@cantronics.com.

**PROMOTIONAL PARTNER****Carl Hanser Verlag GmbH & Co. KG #L2**

Kolbergerstr 22, Muenchen, Germany, 81679  
+49 89 99830 0; fax +49 89 99830 623  
info@hanser.de; www.hanser.de

**Featured Product: Laser+Photonics (Magazine).**

Contact: Gregory Flinn, Editor, flinn@hanser.de; Martin Ricchiuti, Advertising Manager, ricchiuti@hanser.de.

**CeramTec North America #1424**

One Technology Pl, Laurens, SC, 29360  
+1 864 682 3215; fax +1 864 682 1121  
sales@ceramaseal.com; www.ceramaseal.com

**Featured Product: Our glass sealed products are suited for military aircraft, laser-guided systems, and more.**

To your custom specifications, CeramTec can press, stamp, cast, laser, metalize, grind, and/or injection mold Alumina, Zirconia, Silicon Nitride, & Silicon Carbide. Our Ceramaseal® electrical & optical components include: feedthroughs, multi-pin and coaxial connectors, thermocouples, isolators, viewports, & accessories. These components can endure extreme conditions and environments (ultra-high vacuum environment, temperatures from cryogenic (4 K) to 450 °C, pressures 25,000+ psig). ISO9001:2008. Contact: Mark Duchnak, Global Sales Manager, sales@ceramtec.com.

**CI Systems, Inc. #500**

**SPIE** Corporate Member

759 Cochran St Ste A, Simi Valley, CA, 93065-6229  
+1 805 520 2233; fax +1 805 520 2234  
info@cisystemsinc.com; www.ci-systems.com

**CiDRA Precision Services, LLC #1318**

50 Barnes Park N, Wallingford, CT, 06492  
+1 203 774 4422; fax +1 203 774 4455  
cgranucci@cidracps.com; www.cidracps.com

**Featured Product: Precision machining glass, sapphire, ceramic & hard metal. Flow Cells. Conductivity Heat Spreaders.**

CiDRA Precision Services, LLC is an industry leading supplier of custom-manufactured, micron-precision products from glass, ceramic, sapphire, and hard metal materials. We leverage our in-depth dicing, drilling, milling, grinding, and polishing capability to manufacture the highest quality products to customers exacting requirements. Contact: Kirk Schoell, Vice President Operations, kschoell@cidracps.com; Cathy Granucci, Business Administration Manager, cgranucci@cidracps.com.

**Clear Align #1017**

**SPIE** Corporate Member

2550 Boulevard of the Generals Ste 280, Eagleville, PA, 19403  
+1 484 956 0510; fax +1 484 956 0511  
info@clearalign.com; www.clearalign.com

**Featured Product: Featherweight INSPIRE: up to 40% weight reduction with no compromise.**

Clear Align delivers custom electro-optic systems and subsystems utilizing imaging, fiber-optic and laser technologies to serve the intelligence, surveillance and reconnaissance communities. Clear Align is a leading optical innovator providing high-performance design-to-manufacture solutions to mission critical defense and aerospace applications. More information is available at www.clearalign.com. Contact: David Huff, VP Business Development, david.huff@clearalign.com; Angelique Irvin, CEO, angelique.irvin@clearalign.com .

## Cobham Mission Systems

#323

2734 Hickory Grove Rd, Davenport, IA, 52804  
+1 563 383 6000; fax +1 563 383 6430  
bob.nelson@cobham.com; www.cobham.com

Cobham Life Support, Davenport IA, is a world leading manufacturer of air separation technology for aviation applications, underwater military rebreathers, and miniature stirling cycle cryogenic coolers. Contact: Robert Nelson, Business Development Manager, bob.nelson@cobham.com; Asif Ahmed, Business Development Manager, asif.ahmed@cobham.com.

## Cobham Sensor Systems

#323

6950 112th Circle, Largo, FL, 33773  
+1 727 299 0150; fax +1 727 541 6403  
aps-custserv@cobham.com; www.cobham.com

Cobham Sensor Systems in Largo, Florida is a world leader in design and manufacture of high accuracy, highly reliable, modular stabilized gimbals and controls that support the military Electro-Optical, C3I, and radar markets. Our systems are ideally suited for pointing optical sensors, lasers, radars, and communications antennas and are designed for ground stabilization, shipboard stabilization and airborne stabilization applications. Contact: Alex Doig, Manager, Business Development, alex.doig@cobham.com; Alvin Penton, Director, EO Systems, alvin.penton@cobham.com.

## Coherent Inc.

#418

**SPIE** Corporate Member

5100 Patrick Henry Dr, Santa Clara, CA, 95054  
+1 408 764 4000; fax +1 408 764 4800  
info\_service@coherent.com; www.coherent.com

World's leading manufacturer of photonics-based products for a wide range of commercial and scientific applications. Industry's largest and most diverse selection of lasers and a wide range of laser test and measurement equipment. Highly reliable, high performance product lines include CO<sub>2</sub>, continuous-wave, diode, diode module, diode-pumped solid-state, optically pumped semiconductor lasers (OPSL), excimer, ion, tunable-dye, YAG, YLF, and ultrafast lasers. Contact: Mark Gitin, Mark.Gitin@coherent.com; John Morales, John.Morales@Coherent.com.

## Coherent Logix

#3203

1120 S Capital of Texas Hwy Bldg 3 Ste 310, Austin, TX, 78746  
+1 512 382 8940; fax +1 512 382 8941  
clxinfo@coherentlogix.com; www.coherentlogix.com

**Featured Product: Low power, video/imaging many-core processors and RF devices.**

Coherent Logix, Incorporated is a leader in low power, high performance, C-programmable processors, and RF devices for the embedded systems market. Since the introduction of the HyperX™ many-core processor, Coherent Logix has radically redefined low power, high performance processing capability for embedded systems. In 2010, Coherent Logix introduced the rfx1050s low phase noise, wideband 5GHz RF FRAC-N synthesizer, which is the first product in a new family of rfx™ RF chipsets. Contact: Gordon Cook, Director of Business Development, gcook@coherentlogix.com; Martin Hunt, Video and Imaging Program Manager, hunt@coherentlogix.com.

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See course listing on pages 20– 22.

## Computational Physiology Lab (CPL)

#109

4800 Calhoun, Houston, TX, 77478  
+1 713 743 3350; fax +1 713 743 3335  
lindner@cs.uh.edu; www.cpl.uh.edu

**Featured Product: Physio-Vision: Non-contact measurement of physiological signs (breath, pulse, stress).**

We are an interdisciplinary research lab that focuses on the development of unobtrusive and sustained monitoring methods for physiological variables. This monitoring is embedded imaginatively in psycho-physiological, bio-medical, and behavioral paradigms. Sensing is effected either through thermal imaging or wearable transducers. We are famous for our work in stress quantification, lie detection, sleep studies, and behavioral gaming. All of them found civilian or military applications. Contact: Ioannis Pavlidis, Professor, ipavlidis@uh.edu; Peggy Lindner, Research Assistant Professor, lindner@cs.uh.edu.

## Contact Corporation

#1426

1818 Roberts St, Winchester, VA, 22601  
+1 540 722 8716; fax +1 540 722 8717  
www.contactcorp.net

**Featured Product: Tactical Mast Trailer (TMT) Communications station.**  
Deploys to 30 m in under 20 minutes!

Contact Corporation provides user-friendly telescoping antenna mast systems to the military, emergency and first responder services. Contact is a systems integrator and the North American Distributor of telescoping antenna masts manufactured by Cobham Mast Systems Of Finland. Contact designs, fabricates, and integrates complete systems of transportable antenna mast towers for tactical communications, based on Contact's patented bracket technology and Cobham Mast System products. Contact: Hig Montini, Sales Support/Pricing, hmontini@contactcorp.net; Gary Groah, Director of Business Development, ggroah@contactcorp.net.

## CoorsTek Technical Ceramics

#3113

555 NE 53rd Ave, Hillsboro, OR, 97124  
+1 503 693 2173; fax +1 503 648 1501  
dcavanaugh@coorstek.com; www.coorstek.com

## CorActive High-Tech, Inc.

#1126

**SPIE** Corporate Member

2700 Jean-Perrin Ste 121, Quebec, QC, Canada, G2C 1S9  
+1 418 845 2466; fax +1 418 845 2609  
sales@coractive.com; www.coractive.com

**Featured Product: Fiber Optics.**

CorActive manufactures Specialty Optical Fibers for applications in the industrial, telecom, defense, sensing, medical, and scientific markets. CorActive has the know-how and expertise to produce customized fibers for any application. We devote a team of specialists to your project, and once the fiber has been developed, our state-of-the-art automation systems go into full-scale production mode just for you.

## CPS Technologies Corp.

#1507-A

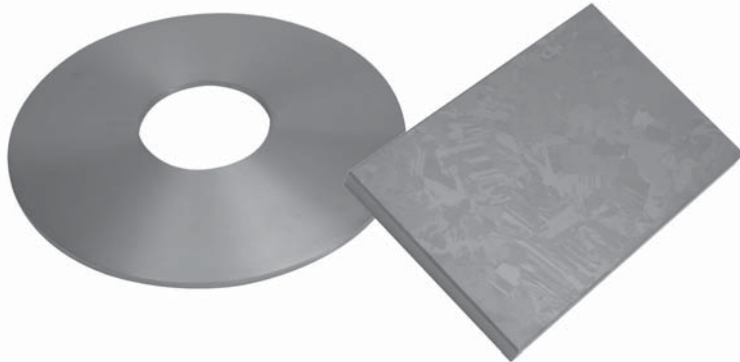
111 S Worcester St, Norton, MA, 02766  
+1 508 222 0614; fax +1 508 222 0220  
www.alsic.com

**Featured Product: Hermetic packages with AlSiC base for lightweight assembly and optimal thermal performance.**

CPS Technologies Corporation is the worldwide leader in the design and high-volume production of AlSiC (aluminum silicon carbide) for high thermal conductivity and device compatible thermal expansion. AlSiC thermal management components include Hermetic Electronic packages, Heat sinks, Microprocessor & Flip chip heat spreader lids, Thermal substrates, IGBT base plates, Cooler baseplates, Pin Fin baseplates for Hybrid Electric Vehicles (HEV), Microwave & Optoelectronic Housings. Contact: Cheryl Oliveira, VP Sales, coliveira@alsic.com; Bo Sullivan, Senior Account Manager, bsullivan@alsic.com.



# Deposition Tools & Materials



- Deposition materials for all optical applications including IR, AR, TCO and reflective.
- Configurations include sputtering targets and pellets.
- Immediate shipment on Tantalum, Niobium, Silicon, Gold, ITO, and MgF<sub>2</sub>
- Global leader for thin film deposition tools and equipment.

**Kurt J. Lesker**  
Company

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

Kurt J. Lesker Company  
United States  
412.387.9200  
800.245.1656  
salesus@lesker.com

Kurt J. Lesker Canada Inc.  
Canada  
416.588.2610  
800.465.2476  
salescan@lesker.com

Kurt J. Lesker Company Ltd.  
Europe  
+44 (0) 1424 458100  
saleseu@lesker.com

Kurt Lesker (Shanghai) Trading Company  
科特·莱思科(上海)商贸有限公司  
Asia  
+86 21 50115900  
saleschina@lesker.com



11-025

## Creaform

5825 St-Georges, Levis, QC, Canada, G6V 4L2  
+1 418 833 4446; fax +1 418 833 9588  
info@creaform3d.com; www.creaform3d.com

**Featured Product: Handyscan 3D, HandyPROBE and MetraSCAN line of products.**

Creaform specializes in 3D portable optical measurement technologies and engineering services. We offer innovative solutions, including 3D scanning, reverse engineering, quality control, design & engineering and FEA. Creaform has developed and sells the Handyscan 3D line of portable, self-positioning handheld 3D scanners, the HandyPROBE fully portable arm-free CMM, the MetraSCAN optical CMM 3D scanner and the Creaform 3D Body Digitizers. Contact: info@creaform3d.com.

#3617

## CREOL, The College of Optics & Photonics, Univ. of Central Florida

SPIE Corporate Member

PO Box 162700, 4000 Central Florida Blvd Bldg 53, Orlando, FL, 32816-2700  
+1 407 823 6800; fax +1 407 823 6880  
info@creol.ucf.edu; www.creol.ucf.edu

UCF, the 3rd largest U.S. university and home of CREOL, The College of Optics and Photonics, provides exceptional education for BS, MS, and PhD degrees and partners with industry, government, and universities for innovative R&D collaborations. Aggressive support system for technology commercialization, State-supported financial advantages and incentives, Booming high-tech sectors, Exceptionally strong optics and photonics knowledge and industry base.

#435

## Creative Microsystems Corp.

SPIE Corporate Member

49 Fiddlers Green, Waitsfield, VT, 05673  
+1 802 496 6620; fax +1 802 496 6621  
sales@creativemicro.com; www.creativemicro.com

#1234

## Criterion Instrument

5349 W 161st St, Brook Park, OH, 44142  
+1 216 267 1733; fax +1 216 267 4542  
office@criteriontool.com; www.criteriontool.com

Criterion Instrument, a Female Owned, ISO 9001:2008, FDA & ITAR registered manufacturer, has been providing custom precision machined parts for over 50 years to the medical, aerospace, defense and commercial industries. From prototype to production we can support your projects. Our capabilities include CNC milling, turning and CNC Swiss turning. Criterion wants to be part of the solution, let us quote your next project. Contact: Tanya DiSalvo, President, tdisalvo@criteriontool.com; Quotes, Estimating Department, quotes@criteriontool.com.

#540

# Exhibitor Directory

## Critical Link LLC

6712 Brooklawn Pkwy, Syracuse, NY, 13211  
+1 315 425 4045; fax +1 315 425 4048  
info@criticallink.com; www.criticallink.com

#3702

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## CVI Melles Griot

SPIE Corporate Member

200 Dorado Pl SE, Albuquerque, NM, 87123  
+1 505 296 9541; fax +1 505 298 9908  
optics@cvimellesgriot.com; www.cvimellesgriot.com

#939

CVI Melles Griot is excited to be your photonic technology partner! Learn about our new exciting filter and shutter products that will save you money, time and improve your system performance. Talk to us about your challenging requirements and see how our greatly expanded capabilities in diamond turning, CNC optical fabrication, and Build-Your-Own component manufacturing competencies will help you get to market quicker.

## CYCLONE Central Research Institute

SPIE Corporate Member

77 Schelkovskoye Shosse, Moscow, Russia, 107497  
+7 495 469 4144; fax +7 495 460 4800  
cyclone@asvt.ru; www.cyclone-jsc.ru

#3922

**Featured Product: Thermal imaging cameras, low-light TV cameras, complex EO systems.**

Design, development and manufacturing EO devices and systems.  
Contact: Oleg Iakovlev, Deputy General Director, cyclone@asvt.ru.

## D&P Instruments

1280 Hopmeadow St Unit E, Simsbury, CT, 06070  
+1 860 658 0458; fax +1 860 651 0698  
microfts@aol.com; www.dpinstruments.com

#302

**Featured Product: Model 102 and TurboFT Remote Sensing Spectrometers.**

D&P Instruments specializes in small, hand-portable, battery-operated remote sensing FTIR spectrometers. We currently have two different interferometer designs, the Micro FT and Turbo FT. The Micro FT is a standard 1-2 scan per second device. It is used in our Model 102 spectrometer. The Turbo FT operates at higher scan rates of 25-100 scans per second. Both have a maximum spectral resolution of  $4\text{ cm}^{-1}$ . The software supplied supports measurements of absolute radiance and emissivity. Contact: Win Wadsworth, President, microfts@aol.com.

## DataRay, Inc.

SPIE Corporate Member

14505 Seaman Gulch Rd, Bella Vista, CA, 96008  
+1 530 472 1717; fax +1 530 472 1716  
info@dataray.com; www.dataray.com

#120

## Davidson Optronics, Inc.

2223 W San Bernardino Rd, West Covina, CA, 91790  
+1 626 962 5181; fax +1 626 962 5188  
sales@davidsonoptronics.com; www.davidsonoptronics.com

#738

## Davis Marketing International

SPIE Corporate Member

3412 Brian Rd S, Palm Harbor, FL, 34685  
+1 866 456 1064; fax +1 888 266 0532  
gene@davismarketingintl.com; www.davismarketingintl.com

#432

**Featured Product: Solid State Laser Materials including Nd:YAG, CTH:YAG, RUBY, Nd:YVO<sub>4</sub>.**

Davis Marketing International, DMI, founded in 1993, supplies optical components, laser and nonlinear materials for laser OEM's. Products are Laser Materials; Nd:YVO<sub>4</sub>, Nd:YAG, YAG, Ruby and CTH:YAG; rods, bars, slabs and optics. Nonlinear Materials are KTP LT Hydrothermal which is lowest absorption, with highest damage threshold ( $\text{kw/cm}^2$ ) available. Other nonlinear materials are LBO, and BBO. Sheumann's 3 watt, diode pumped, fiber delivered, 3 micron laser module will be on display. Contact: Gene Davis, President, Gene@DavisMarketingIntl.com; Ron Humphrey, Marketing & Sales, rhumphrey1@carolina.rr.com.

## Daylight Solutions

SPIE Corporate Member

15378 Avenue of Science, San Diego, CA 92128  
+1 858 432 7500; fax: +1 858 432 5737  
carmacost@daylightsolutions.com; www.daylightsolutions.com

#3207

**Featured Product: Multiwavelength, multiwatt SWIR and MWIR systems. Tunable and fixed mid-infrared laser.**

Manufacturer of Mid-IR, Tunable, Room-temperature, Pulsed and CW Lasers and Detectors from 2-14  $\mu\text{m}$ . OEM configurations available. Laser performance includes tunability of  $\pm 15\%$  of the center wavelength, average power up to 2 W, peak pulsed power > 3 W. Contact: Chris Armacost, Director of Sales, carmacost@daylightsolutions.com; Edward Tochikubo, Regional Sales Manager, etochikubo@daylightsolutions.com.

**PROMOTIONAL PARTNER**

## Defense Tech Briefs

1466 Broadway, New York, NY, 10036  
+1 212 490 3999; fax +1 212 986 7864  
joe@techbriefs.com; www.techbriefs.com

#1023

**Featured Product: Mil-Aero Market's Largest-Circulation Engineering Magazine.**

Join over 96,000 design engineers and managers who read *Defense Tech Briefs* for the latest technology innovations from Department of Defense R&D labs. Each issue spans electronics, imaging, software, sensors, test, manufacturing, and more. Sign up for a free subscription and also get the DTB e-newsletter. Contact: Joe Pramberger, Publisher, joe@techbriefs.com; Linda Bell, Editorial Director, linda@techbriefs.com.

## Delta Digital Video

300 Welsh Rd Bldg 3, Horsham, PA, 19044  
+1 215 657 5270; fax +1 215 657 5273  
ddv@deltadigitalvideo.com; www.deltadigitalvideo.com

#1204

Delta Digital Video, key supplier of practical, cost-effective digital video solutions for the Military/Aerospace market, emphasizing UV applications. We design and manufacture video compression products for real time transmission of high quality video, audio and synchronized metadata. We will demonstrate the latest additions to our 6000 Series product line. Our new MISB-compliant HD/SD products were designed specifically for integration with advanced payloads and legacy datalinks. Contact: George Nelson, VP & General Manager, gnelson@delta-info.com; Shane Woolridge, Marketing Manager, swoolridge@delta-info.com.

**Denton Vacuum, LLC**

#635

1259 N Church St Bldg 3, Moorestown, NJ, 08562  
+1 856 439 9100; fax +1 856 439 9111  
info@dentonvacuum.com; www.dentonvacuum.com


**METER BOARD SPONSOR**
**Deposition Sciences, Inc**

#1226



3300 Coffey Ln, Santa Rosa, CA, 95403  
+1 707 573 6758; fax +1 707 573 6748  
solutions@depisci.com; www.depisci.com

**Featured Product: DSI's rugged and reliable coatings on plastics, from visible through IR, are ideal for UAV optics.**

Since 1985, Deposition Sciences, Inc. has produced the most durable optical thin film filter coatings in the industry. DSI's coating capability ranges from the ultraviolet (UV), through the visible, to near-infrared (NIR), midwave-infrared (MWIR), and out to the longwave infrared (LWIR) region. DSI's technology is based on its proprietary MicroDyn® reactive sputtering deposition process that enables superior, multilayer thin film coatings for precision optics. Contact: Tatiana Goobanoff, Inside Sales Manager, goobanoff@depisci.com.

**Diamond USA Inc.**

#1236

27 Industrial Ave, Chelmsford, MA, 01824  
+1 978 256 6544; fax +1 978 256 3362  
info@diamond-fo.com; www.diamond-fo.com

**Featured Product: E2000 Power Solution Connector. See how Diamond can help with high optical power connectivity.**

Diamond USA is a manufacturer of high quality fiber optic connectors and custom assemblies. We have solutions specifically designed for Aerospace, and other harsh environment applications. Diamond has the expertise to help you with High Power, Polarity Maintaining, small core, and guaranteed .1db IL connections. Please visit our booth to learn more about our multi channel, board level, and space qualified connectors. Contact: David Hardy, National Sales Manager, dhardy@diausa.com.

**DIAS Infrared GmbH**

#3007

Gostritzer Str 65, Dresden, Germany, 01217  
+49 351 8717228; fax +49 351 8717230  
info@dias-infrared.de; www.dias-infrared.de

R&D, manufacturing and sales of uncooled fixed infrared cameras PYROVIEW, line cameras PYROLINE, pyrometers PYROSPOT for non-contact temperature measurement, blackbody calibration sources PYROTHERM, complete industrial infrared system solutions, pyroelectric detectors, calibration and R&D services.

**Dilas Diode Laser Inc.**

#1016



9070 S Rita Rd Ste 1500, Tucson, AZ, 85747  
+1 520 232 3480; fax +1 520 232 3499  
sales@dilas-inc.com; www.dilas.com

Our high volume, ISO certified and ITAR compliant facility designs, develops, and manufactures high-power, high-brightness diode laser components, modules and systems, including fiber coupled products for the military and aerospace industries. Contact: Steve Patterson, GM/ Director of Technology, s.patterson@dilas-inc.com.

**Discovery Technology International, LLP**

#3704

6578 Palmer Park Cir, Sarasota, FL, 34235  
+1 941 921 5111; fax +1 941 921 5114  
sales@discovtech.com; www.discovtech.com

**Dontech Inc.**

#3206

700 Airport Blvd, Doylestown, PA, 18902  
+1 215 348 5010; fax +1 215 348 9959  
JBlake@dontechinc.com; www.dontech.com

**Dora Texas Corp.**

#3418

9900 Westpark Ste 200, Houston, TX, 77063  
+1 713 334 7277; fax +1 713 334 5543  
led@doratexas.com; www.doratexas.com

**Dow Electronic Materials**

#1106

455 Forest St, Marlboro, MA, 01752  
+1 508 481 7590; fax +1 508 485 9113  
www.dow.com

**Featured Product: Infrared optics for military IR system: CLEARTRAN™, CVD ZINC SULFIDE™, CVD ZINC SELENIDE™.**

Dow Electronic Materials supplies high-quality infrared optical materials for military IR systems and commercial applications. We have pioneered the development and manufacture of CVD Zn-based optical materials such as CLEARTRAN™ multispectral ZnS, CVD ZINC SULFIDE™ and CVD ZINC SELENIDE™. Dow offers best-in-class material solutions, as well as fabrication capabilities to suit most design and format needs. Electro-optical windows, domes, subassemblies, imaging lenses, other components and more. Contact: Rosanna Gizzi, Business Manger, Infrared Optics, rgizzi@dow.com.

**DRS Technologies, Inc.**

#523



3520 U.S. Highway 1, Palm Bay, FL, 32905  
+1 321 308 4800  
www.drs.com

**Featured Product: DRS introduces the UC 320-17 - its smallest thermal imager to date.**

DRS Technologies Reconnaissance, Surveillance & Target Acquisition group is a leader in electro-optical and infrared system technologies, supporting the efforts of the U.S. armed forces. Our focus is on thermal image sighting and targeting systems, weapons fire control systems and advanced FLIR sensors for battle space applications. DRS's systems provide forces with a technological advantage in target detection, recognition and identification, countermeasures and high-value asset protection. Contact: Margaret Mello, Manager, Business Development, mmello@drs-rsta.com.

**DST Control**

#1331



Åkerbogatan 10, Linköping, Sweden 58254  
+46 13 211080; fax +46 13 211081  
info@dst.se; www.dst.se

**Featured Product: OTUS Stabilized EO Sensor Systems. Light-weight and high performance gyro stabilized gimbals.**

The "OTUS" gyro-stabilized electro-optical micro-gimbal is one of the smallest and lightest gimbals on the market, yet providing performance & functions found only in much larger units. It comes with a day-light camera and/or an un-cooled infrared camera combined with a laser range finder. OTUS provides unique optional functions such as geo-localization, automatic video tracking, video recording, everything integrated within the gimbal. The OTUS gimbals have no export restrictions, nor ITAR. Contact: Magnus Sundstedt, Marketing Director, magnus@dst.se; Jonas Yxfeldt, Sales & Marketing, jy@dst.se.



## Dyconex AG

#3205

Grindelstr 40, Basserdorf, Switzerland, 8303  
+41 43 266 11 00; fax +41 43 266 11 01  
mail@dyconex.com; www.dyconex.com

**Featured Product: LCP packaging substrates.**

Based in Switzerland, DYCONEX has been in the PCB business for over 40 years and delivers leading-edge interconnect solution in flex, rigid-flex and rigid technology. DYCONEX core competence lies in the production of highly complex HDI, high-frequency and high-reliability circuit boards for medical, defense and semiconductor applications. DYCONEX is a MST company. Contact: Kevin Walker, General Manger, kevin.walker@dyconex.net; Brian Sinclair, Applications Engineering Manager, brian.sinclair@dyconex.net.

## E.T. Precision Optics Inc.

#200

**SPIE** Corporate Member

33 Curlew St, Rochester, NY, 14606  
+1 585 254 2560; fax +1 585 254 2966  
jgligora@etprecision.com; www.etprecision.com

## Earth Imaging Journal

#L6

PO Box 336400, Greeley, CO, 80633  
+1 970 223 6295; fax +1 970 339 5517  
jhughes@ejjournal.com; www.ejournal.com

**Featured Product: Earth Imaging Journal is devoted to exploring the world of remote sensing.**

Published by Earthwide Communications, *Earth Imaging Journal* focuses on the dominant business applications that support the international remote sensing industry. *Earth Imaging Journal* is complemented by its Web site, www.ejournal.com. Contact: John Hughes, Editorial Director, jhughes@ejournal.com.

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## Edmund Optics

#616

**SPIE** Corporate Member

101 E Gloucester Pike, Barrington, NJ, 08007  
+1 856 547 3488; fax +1 856 573 6272  
sales@edmundoptics.com; www.edmundoptics.com

Edmund Optics (EO) is a leading producer of optics, imaging, and photonics technology supporting the R&D, electronics, semiconductor, biotech, and defense markets around the globe. As one of the leading providers of optics and optical assemblies to defense contractors, EO has created a "World Class" compliance program and is ITAR compliant with US State Department guidelines. EO's stock and custom night vision optics are 84% manufactured in the USA. Contact: Thomas Kessler, VP of Global Sales, sales@edmundoptics.com; Kirsten Bjork-Jones, Director of Global Marketing Communications, sales@edmundoptics.com.

## EDT, Inc.

#1302

1400 NW Compton DR Ste 315, Beaverton, OR, 97006  
+1 503 690 1234; fax +1 503 690 1243  
info@edt.com; www.edt.com

**Featured Product: PCIe x8 Camera Link simulator (PCIe8 DV CLS) simulates almost any camera; converts to framegrabber.**

EDT, Inc. (Beaverton, Oregon, USA) designs and builds Camera Link framegrabbers, simulators, and extenders over fiberoptic or coaxial cable. Our products work with multiple form factors (PCI Express, PCI, PMC, CompactPCI), operating systems (Windows, Linux, Solaris, Mac), and camera models (base, medium, and full mode). Every product comes with a full software development kit, a common application programming interface, and the best engineer-to-engineer support in the business. Contact: Cliff Hayes, Field Application Engineer, tech@edt.com.

## EGIDE

#1316

4 Washington St, Cambridge, MD, 21613  
+1 410 901 6200  
www.egide.fr

EGIDE designs and manufactures hermetic glass-to-metal and ceramic-to-metal packaging for telecommunications, industrial, military and aerospace applications. Products include: 14 pin butterflies, minidil and various plug-in and flat pack style packages. Our products protect optical devices and circuits that control wave monitoring, guided missiles, flight control operations and more. Contact: Kirk Williamson, Sales Manager, kirk.williamson@egideusa.com.



**WIFI SPONSOR**

## Elbit Systems of America

#3417

220 Daniel Webster Hwy, Merrimack, NH, 03054  
+1 603 889 2500; fax +1 603 886 2007

## Electro Optical Industries, Inc.

#823

**SPIE** Corporate Member

859 Ward Dr, Santa Barbara, CA, 93111  
+1 805 964 6701; fax +1 805 967 8590  
eoi@electro-optical.com; www.electro-optical.com

**PROMOTIONAL PARTNER**

## Electro Optics Magazine

#L3

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

**Featured Product: Electro Optics is now available as a FREE digital edition worldwide, www.electrooptics.com/subscribe.**

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## Electro-Optical Imaging, Inc.

#422

**SPIE** Corporate Member

4300 Fortune PI Ste C, West Melbourne, FL, 32904  
+1 321 435 8722; fax +1 321 435 8723  
info@eoimaging.com; www.eoimaging.com

**Featured Product: The new Series 8000 miniature video tracker is designed for surveillance and UAV applications.**

Electro-Optical Imaging, Inc. is an industry leader in the design, development and manufacture of high-performance Automatic Video Trackers & Tracking Systems. Existing off-the-shelf products can be customized to specifications in order to meet the most complex and demanding test range, tactical and surveillance applications. Trackers are available for VMEbus, PCI, PCI Express and custom platforms interfacing with standard and nonstandard video formats, including Camera Link and High Definition. Contact: George A. Downey, President, gdowney@eoimaging.com; Nathan Harris, Vice President Operations & Engineering, nharris@eoimaging.com.

**Element Six****#1432**

1 Broadway Cambridge Innovation Center,  
Cambridge, MA, 02142  
617 682 3675; fax 617 225 4490  
www.e6.com

**Featured Product: Precision polished industrial diamonds.**

Element Six manufactures a wide range of diamond materials for advanced technology applications. Products are made from engineered synthetic diamond. Technologies incorporating diamond include: high power laser optics, output couplers, beam splitters, YAG cooling structures and infrared imaging. Other areas utilizing diamond include thermal management, novel electronics, sensing devices and scientific research. Standard and custom engineered solutions are available to meet your requirements. Contact: Peter Santini, VP Sales and Marketing, peter.santini@e6.com; Thomas Obeloer, Sales Thermal Management, thomas.obeloer@e6.com.

**Elsys Instruments, LLC****#3007**

234 Cromwell Hill Rd, Monroe, NY, 10950  
+1 845 238 3933; fax +1 845 238 3472  
info@elsys-instruments.com; www.elsys-instruments.com

**Eltek USA Inc.****#741**

25 Orchard View Dr, Londonderry, NH, 03053  
+1 603 421 0020; fax +1 603 421 0023  
www.eltekglobal.com

**Featured Product: High Reliability, High Density, ITAR Compliant, Printed Circuit Board Technologies.**

Eltek is a leading manufacturer of technologically advanced circuitry solutions for use in sophisticated and compact electronic products. Eltek's products are used as the core technology in some of the worlds most advanced electronics applications found in Aerospace, Defense and Medical applications. Registered and fully licensed through the Dept of State; Eltek meets all of the required guidelines as an exporter of defense articles and services. Let us extend the limits of your technology. Contact: Jim Barry, President, jbarry@eltek.us; Joel Robbins, Regional Sales Manager, jrobbins@eltek.us.

**EM Photonics****#3304**

51 E Main St Suite 203, Newark, DE, 19711  
+1 302 456 9003; fax +1 302 456 9004  
info@emphotonics.com; www.emphotonics.com

EM Photonics develops high performance computing and embedded systems solutions primarily in the areas of image processing, scientific computing, and numerical analysis. We solve our customers' problems by developing systems that can be easily and effectively integrated into their platforms, optimizing for performance, size, weight, power, or a combination of these factors. Whether CPU-, GPU-, or FPGA-based, we maximize any platform to create novel solutions for our military and defense clients. Contact: Fernando Ortiz, PhD, Senior Engineer, ortiz@emphotonics.com; Liana Barbedo, Director of Marketing, barbedo@emphotonics.com.

**EM4, Inc.****#530**

**SPIE** Corporate Member

7 Oak Park, Bedford, MA, 01730  
+1 781 275 7501  
sales@em4inc.com; www.em4inc.com

**Featured Product: The EM650 integrates a high-power fiber-coupled DFB laser.**

Manufacturer of high reliability, hermetically packaged, fiber pigtailed and free space optoelectronic components and subsystems for harsh environments: terrestrial, marine and aerospace. Featuring: 100 mW DFB lasers (C and L band, 5 GHz direct mod); 10W multimode pump s(780nm-980nm); 800mW SM pumps (915nm-1064nm); < 10 ns rise/fall time AOM's (530nm, 1060nm & 1550nm); 20 GHz detectors; HP fiber coupled isolators. Contact: Winn Gatewood, CSR, wgatewood@goochandhousego.com; Ed McCartin, Director of Sales, emccartin@goochandhousego.com.

**eMagin Corp.****#3202**

3006 Nothup Way, Suite 103, Bellevue, WA, United States, 98004  
+1 425 284 5200; fax +1 425 284 5201  
info@emagin.com; www.emagin.com

**EMCORE Corporation****#413**

2015 Chestnut St, Alhambra, CA, 91803  
+1 626 293 3400; fax +1 626 293 3428  
specialty-sales@emcore.com;  
www.emcorephotonicsystems.com

**Featured Product: THz Systems, Fiber Optic Gyros, RF and Video Fiber Optic Links, LIDAR, High-Efficiency Solar Cells.**

EMCORE Optical Technology for Defense and Security: Portable Terahertz Spectrometers for material analysis and threat detection; Compact, Low-Power Fiber Optic Gyroscopes and IMUs for robots, handhelds and aerospace; Fiber Optics for Satcom, Microwave and Video transport to 40 GHz; Fiber Optic RF Delay-Lines for RADAR system test and calibration; Optical amplifiers and LIDAR sources; Lithium-Niobate, InP and GaAs optical device fab and packaging; High-Efficiency Triple-Junction Solar Cells. Contact: Ramzi Sawires, Product Line Director, ramzi\_sawires@emcore.com; Ron Logan, Vice President, rlogan@emcore.com.

**Engineered Surface Finishes****#506**

870 N Commons Dr, Aurora, IL, 60504  
+1 630 499 2771; fax +1 630 978 3033  
www.ensurfin.com

**EPIX, Inc.****#128**

**SPIE** Corporate Member

381 Lexington Dr, Buffalo Grove, IL, 60089  
+1 847 465 1818; fax +1 847 465 1919  
epix@epixinc.com; www.epixinc.com

**Featured Product: EPIX will display the SV10CL camera link camera and PIXCI ECB1-34 express card frame grabber.**

EPIX manufactures cost effective cameras, frame grabbers, software, computer imaging systems, cables and power supplies for OEM machine vision using line scan, area scan, high speed and high resolution cameras. On display will be our 10 megapixel camera link camera and our PIXCI SI4 frame grabber with 4, 8, or 12 cameras in one computer with our XCAP software. Contact: Charlie Dijak, Sales Engineer, acp@epixinc.com; Chuck Petersen, Engineer, acp@epixinc.com.

**SPIE Job Fair – Special 2-Day Event!**

Cypress 1 Foyer

**Top employers are coming together to interview  
and hire candidates**

Tuesday 26 April · 9:30 am to 5:00 pm  
Wednesday 27 April · 10:00 am to 5:00 pm



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SPIE Corporate Member

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+1 718 782 5948; fax +1 718 963 2930  
info@epner.com; www.epner.com

A comprehensive array of electroplating, coating and optical technologies - NIST Infrared standard. Laser Gold® named for the highest reflecting surface for IR LASER CAVITIES. Laser Black®, - which some say, "Actually swallows light". Electroformed cold shields, custom-designed light waveguides, laser pump cavity reflectors and thermal barrier foil - serving laser, optics and photonics, semi-conductor, automotive, medical, aerospace and military markets. Contact: David Epner, President, Info@epner.com; Paul J. Brancato, V.P. & General Manager, Info@epner.com.

#124

## EPTAM Plastics, Inc.

2 Riverside Business Park, Northfield, NH, 03276  
+1 866 443 7826; fax +1 603 286 3977  
rwiedinmyer@eptam.com; www.eptam.com

EPTAM Plastics' focuses on customers and their requirements for precision machined polymer components. ISO 9001:2008 certified and AS:9100 compliant; skilled technicians, advanced quality systems and technologies such as 3, 5 and 7-axis machining, support EPTAMs' commitment to manufacture and deliver the highest quality machined plastics components. Delrin®, PEEK, Ultem®, Torlon® and other advanced polymers are machined for leading industry OEMs in the Aerospace and Defense industries. Contact: Bob Wiedinmyer, Director of Sales, rwiedinmyer@eptam.com.

#3321

## ER Precision Optical Corp.

SPIE Corporate Member

505 W Robinson St, Orlando, FL, USA, 32801  
+1 407 292 5395; fax +1 407 292 7984  
audelhofen@eroptics.com; www.eroptics.com

#434

## Esquire Manufacturing Technologies

200 Centerville Road, Lancaster, PA, 17603  
+1 717 358 9229; fax +1 717 393 4600  
linda.buzzee@mpcind.com; www.mpcind.com

**Featured Product: Esquire Mfg. Technologies features engineered solutions and automated "value add" manufacturing.**

Esquire Mfg. Technologies is a diversified tier one manufacturer and global leader of metal and plastic components. Esquire's metal facility produces mechanical assemblies and components manufactured in robotic multi-axis machining cells. Our plastics facility specializes in injected molded parts and assemblies produced using commodity or engineering grade plastics. Our plastics facility offers engineering and secondary services: chrome plating, hot stamping, sonic and vibration welding. Contact: Linda L. Buzzee, Business Development & Product Engineering, linda.buzzee@mpcind.com; Allen Leeson, VP Operations and Business Development, Allen.Leeson@mpcind.com.

#3115

## Free Popcorn



Palms and Cypress Exhibition Halls

Popcorn carts will be open Tuesday and Wednesday from 11:00 am to 3:00 pm; Thursday from 11:00 am to 2:00 pm.

## Evaporated Coatings, Inc.

SPIE Corporate Member

2365 Maryland Rd, Willow Grove, PA, 19090  
+1 215 659 3080; fax +1 215 659 1275  
sales@evapcoat.com; www.evaporatedcoatings.com

**Featured Product: Wide Band Anti-Reflection Coatings for quartz, CaF<sub>2</sub>, ZnS and other for visible to IR.**

Optical coatings including LWP/SWP, bandpass, tri-band filters with extended blocking, metal and dielectric mirrors, high power anti-reflection, low polarizing beamsplitters, low-reflection attenuation coatings, solderable films and custom matched ITO. Wide experience coating high index glasses, polymers, metals, micro optics, fibers, BaF<sub>2</sub>, CaF<sub>2</sub>, Ge, Si, ZnSe, ZnS, LBO, KTP, BBO, GaAs & InP. Custom fixturing for full aperture, IBS, APS and IAD deposition. Contact: Patrick Wenrich, Senior Sales Engineer, sales@evapcoat.com; Karen Farrell, Senior Sales Engineer, sales@evapcoat.com.

#1519

## Evaporated Metal Films Corp.

SPIE Corporate Member

239 Cherry St, Ithaca, NY, 14850  
+1 800 456 7070; fax +1 800 456 3227  
info@emf-corp.com; emf-corp.com

**Featured Product: Ultima Ag 99 silver optimizes blue, maintaining silver reflectance into the NIR region.**

Since 1936 EMF has provided custom designed high performance optical coatings to the defense, aerospace, imaging and display markets. Capabilities include: Beamsplitters, filters, A/R coatings, mirrors, and Large Optics. EMF gold and silver are ideal for high reflectance applications in the visible, near infrared (NIR) and infrared (IR). EMF can accommodate substrates up to 100" and is ITAR registered. www.emf-corp.com. Contact: Joe Howe, Sales Manager, joe@emf-corp.com; Gary German, VP Sales & Marketing, gary@emf-corp.com.

#3928

## Excelitas Technologies Corp.

35 Congress St, Salem, MA, 01970  
+1 978 224 4127; fax +1 978 745 0894  
www.excelitas.com

**Featured Product: Photodetectors and pulsed laser diodes for laser range finding, laser warning systems and more.**

Excelitas Technologies is a global technology leader focused on delivering innovative, customized solutions to meet the illumination, detection and other high-performance technology needs of OEM customers. From analytical instrumentation, industrial, safety and security, and aerospace and defense applications, Excelitas Technologies is committed to enabling our customers' success. Excelitas Technologies has approximately 3,000 employees across the world. Contact: defense@excelitas.com; generalinquiries@excelitas.com.

#1300

## Exotic Electro-Optics

36570 Briggs Rd, Murrieta, CA, 92563  
+1 951 926 2994; fax +1 951 926 1984  
sales@exotic-eo.com; www.exotic-eo.com

**Featured Product: Infrared optics, coatings and assemblies for aerospace, defense, and commercial markets.**

Exotic Electro-Optics, Inc., (EEO), is a leading supplier of state-of-the-art infrared optics, coatings and assemblies for aerospace, defense, and commercial markets. We are vertically integrated from core manufacturing technologies (crystal growth, optical fabrication, and thin film coating production) to complex assemblies. Our products are key components used in infrared military fire control, missile seeker, reconnaissance, navigation, surveillance, and thermal imaging systems. Contact: Katherine Short-St. John, Sr Business Development Manager, kstjohn@exotic-eo.com; Robert Ham, Sr Business Development Manager, rham@exotic-eo.com.

#1239



## Fairchild Imaging

#539

1801 McCarthy Blvd, Milpitas, CA, 95035  
+1 408 433 2500; fax +1 408 435 7352  
sales@fcimg.com; www.fairchildimaging.com

**Featured Product: Fairchild Imaging CAM2051 delivers high sensitivity, resolution and speed.**

Fairchild Imaging, a manufacturer of military and scientific CCD and CMOS image sensors and cameras, provides high-performance detectors for visible, UV and x-ray imaging. Specialties include high-speed, low-noise, megapixel CMOS sensors; wafer-scale Time Delay and Integration (TDI) focal plane arrays, back illuminated CCD/CMOS sensors for high sensitivity applications. Contact: Brad Ostman, Director, Aerospace Imaging, brad.ostman@fcimg.com; Tom Schilling, Director, Defense Imaging, tom.schilling@fcimg.com.

## Fairfield Crystal Technology, LLC

#3902

SPIE Corporate Member

8 S End Plz, New Milford, CT, 06776  
+1 860 354 2111; fax +1 860 354 3093  
atimmerman@fairfieldcrystal.com; www.fairfieldcrystal.com

**Featured Product: CaF<sub>2</sub>, LiF, BaF<sub>2</sub>, MgF<sub>2</sub>, ZnS.**

Fairfield Crystal specializes in crystal growth and component manufacturing for the optical and semiconductor industries. We supply a number of OEMs in a variety of fields, laser, microlithography, spectroscopy. We offer very competitive prices because we manufacture and test everything in-house – from growing the crystal to fabricating the optical component to testing and characterizing the final product. Contact: Andy Timmerman, Director of Sales, atimmerman@fairfieldcrystal.com.

## Fairview Machine Company, Inc.

#3313

427 Boston St, Topsfield, MA, 01983  
+1 978 887 2141; fax +1 978 887 3689

Fairview Machine is a 50 year strong ISO 9001 & ISO 13485 registered precision manufacture of complex optical components and assemblies for worldwide Defense and Aerospace contractors. Within a lean manufacturing environment with an extensive range of CNC capabilities, such as 5-axis high speed machining, 7-axis combination turning and milling, 3D surfacing, and 5-axis wire EDM, Fairview is able to hold the tightest of tolerances on components with the most challenging part geometries. Contact: Ed Pinho, VP Sales, edp@fairviewmachine.us.

## Ferrotec (USA) Corp.

#202

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

**Featured Product: Ferrofluidic Seals, Vacuum Feedthroughs, Thermoelectric Modules (TECs), E-Beam Evaporation Solutions.**

Ferrotec is a world leader in advanced material, component, and system solutions. Ferrotec manufactures a range of precision components for defense, security and sensing applications including our Ferrofluidic<sup>®</sup> rotary seals used in aerospace applications and rotating detector assemblies, a complete line of thermoelectric modules and peltier coolers for temperature-controlled precision sensing, and e-beam coating solutions for precision optics. For more information, visit www.ferrotec.com. Contact: info@ferrotec.com.

**KentOptronics**  
-Liquid Crystals for Photonics

## Multispectral Polarized Scene Projector (MPSP)

- Format** 512x512 pixels
- Spectral range** 850 – 1650 nm
- Bandwidth** 12-100 nm
- Polarization contrast**  $\geq 10: 1$
- Frame rate** >200 Hz
- Polarization states** Six (6)



## Switchable Mirror

- Spectral range** 400 – 3,600 nm
- Reflection  $\Delta\lambda$**  50 – 1,000 nm
- Mirror Photopic R** > 87%
- Clear Photopic T** > 87%
- Switching time** 10 – 100 ms



## Two-Color High BAT IR Scene Projector

- Format** 512x512 pixels
- Spectral range** MWIR; LWIR
- Frame rate** 200 Hz
- BAT** 3,000°C (LWIR):  
1,500°C (MWIR)
- Dynamic range** 12 bits
- Pixel operability** >99.9%



40 Corporate Park Dr.,  
Hopewell Junction, NY 12533  
Tel.: 845-897-0138  
FAX: 845-897-0603  
[www.kentoptronics.com](http://www.kentoptronics.com)

# Exhibitor Directory

## FiberTech-RoMack

#1205

SPIE Corporate Member

PO Box 615, Lightfoot, VA, 23090  
+1 757 258 4805; fax +1 757 258 4694  
contact@romackfiberoptics.com; www.romackfiberoptics.com

FiberTech-RoMack manufactures fiberoptic assemblies, components and related products specifically tailored for spectroscopic, laser, pharmaceutical, medical, process control, and industrial applications. Products include but are not limited to: probes, connectors, adapters, patchcords, bundles, arrays, imagers, collimators, couplers, tapers, cuvette holds and flow cells. We routinely take concept to product creating solutions for the most difficult application problems. Contact: Lisa Young, Sales Manager, contact@leonifo.com.

## Firebird Technologies Inc., A Division of 5N Plus

#508

SPIE Corporate Member

2950 Highway Dr, Trail, BC, Canada, V1R 2T3  
+1 250 364 5605; fax +1 250 364 5643  
don@firebird.bc.ca; www.firebird.bc.ca

**Featured Product: Optical Grade Germanium with full, in-house recycle capabilities.**

Firebird Technologies Inc., a subsidiary of 5N Plus, specializes in the production of the semiconductors Indium Antimonide, Gallium Antimonide, and Germanium along with the high purity metals; Antimony, Indium, Gallium, and Tin. Production processes include electro-refining, zone-refining, crystal growth (Czochralski method), fabrication, and EPI ready polishing finish. Firebird just finished building and is now operating in a new 40,000 sq ft facility in Trail, BC, Canada. Contact: Paul McKay, Manager: Production and Sales, paul@firebird.bc.ca; Don Freschi, General Manager, don@firebird.bc.ca.

## Flex Interconnect Technologies

#409

1603 Watson Ct, Milpitas, CA, 95035  
+1 408 635 3540; fax +1 408 956 8278  
sales@fit4flex.com; www.fit4flex.com

## Flexible Optical BV

#3003

SPIE Corporate Member

Polakweg 10-11, Rijswijk, The Netherlands, 2288 GG  
+31 70 2629420; fax +31 70 7101400  
gleb@okotech.com; www.okotech.com

**FLOOR GRAPHICS AND WELCOME RECEPTION CONTRIBUTING SPONSOR**

## FLIR Commercial Systems Inc.

#700

SPIE Corporate Member

27700 SW Parkway Ave, Wilsonville, OR, 97070  
+1 877 773 3547; fax +1 503 498 3153  
sales@flir.com; www.flir.com

FLIR Systems offers a full line of uncooled and cooled infrared sensors and component products. FLIR's volume detector fabrication capability, ROIC development, OEM packaging and program management gives you with the highest quality sensors at the lowest cost.

## FluxData, Inc.

#211

SPIE Corporate Member

125 Tech Park Dr, Rochester, NY, 14623  
+1 585 820 8730  
www.fluxdata.com

**Featured Product: Series of multispectral, VIS/NIR, Firewire & GigE cameras and systems; MS unattended ground sensors.**

FluxData is a leader in manufacturing multispectral and polarimetric imaging systems and solutions for military and surveillance applications. We offer a range of VIS through SWIR sensor options. Our systems can be custom designed to meet customer's specific applications. Contact: Pano Spiliotis, CEO, pano@fluxdata.com; info@fluxdata.com.

## Fosta-Tek Optics

#1319

320 Hamilton St, Leominster, MA, 01453  
+1 978 534 6511; fax +1 978 537 2168  
info@fosta-tek.com; www.fosta-tek.com

## Fotofab

#219

SPIE Corporate Member

3758 W Belmont Ave, Chicago, IL, 60618  
+1 773 463 6211; fax +1 773 463 3387  
sales@fotofab.com; www.fotofab.com

**Featured Product: Fotofab offers Rapid Delivery of your custom metal parts. Ask about same-day turnaround.**

Fotofab manufactures Precision Metal Parts to meet the most critical design requirements in a wide range of applications. Typical applications: optical apertures, encoders, RF/EMI shields, step lids, contacts, screens, flat springs, antennas, masks, lead frames, and connectors, can be produced quickly and cost-effectively in prototype and production quantities. Standard delivery is one week, with same-day delivery options available. Just tell us what you need! Contact: Dan Sima, Sales & Marketing Coordinator, dsima@fotofab.com; James Tankersley, Technical Sales Supervisor, sales@fotofab.com.

## Fresnel Technologies Inc.

#1102

SPIE Corporate Member

101 W Morningside Dr, Fort Worth, TX, 76110  
+1 817 926 7474; fax +1 817 926 7146  
info@fresneltech.com; www.fresneltech.com

Manufacturer of molded plastic Fresnel lenses and related optical components, as well as infrared transmitting materials and optics made from them. Specialties include lens arrays for passive infrared applications, diffusers and microlens arrays for illumination, and optics for environmental monitoring at 3.4 microns. Design assistance, tooling and production services, and diamond machining available. Contact: Nelson Claytor, President, nclaytor@fresneltech.com; Elvia Zavala, Director of Operations, ezavala@fresneltech.com.

## FUJIFILM North America Corp.

#3609

10 High Point Dr, Wayne, NJ, 07035  
+1 973 633 5600; fax +1 973 633 5216  
www.fujinon.com

**Featured Product: 1/2" 2000mm 2 Mega Pixel Day/night lens.**

FUJIFILM North America Corp, a marketing subsidiary of FUJIFILM Corp, Optical Devices Div. is a provider of binoculars, optical lenses for CCTV, television, videography, cinematography, broadcast and industrial markets. Contact: Martin Morici, Operations Mgr. CCTV Div., martin.morici@fujinon.com.

**GE Intelligent Platforms**

#516

SPIE Corporate Member

Edenfield, Larges Ln, Bracknell Berks, United Kingdom, RG12 9AT  
+44 1344 381281; fax +44 1344 381282  
http://www.ge-ip.com/imageprocessing

**Featured Product: The ADEPT5000 provides advanced multi-target tracking. Visit GE's booth to witness its performance.**

GE Intelligent Platforms provides extensive expertise in video and image processing. Our rugged modules provide real-time image processing, multiple target detection, target tracking, image fusion and image stabilization for electro-optical systems operating in the military and paramilitary environment. We offer a previously unattainable level of situational awareness to platforms such as armored vehicles, aircraft, remote unmanned platforms and security and surveillance systems. Contact: Roger Joel, Director of Sales & Marketing, roger.joel@ge.com; Larry Schaffer, Director of Business Development, larry.schaffer@ge.com.

**Geib Refining Corp.**

#3018

399 Kilvert St, Warwick, RI, 02886  
+1 800 228 4653; fax +1 401 732 2841  
Mike@geibrefining.com; www.geibrefining.com

**Featured Product: Precious Metal Materials; Reclaim, Recycling, Source targets, pellets, grain, and shield cleaning.**

Reclaim and refining of gold, silver, platinum, and palladium from production materials. We supply gold and platinum targets, grain, and pellets either 4N or 5N purity. Scrap includes chamber scrapings, flake, targets, rejected parts, and sand blast media. Services include chamber shielding cleaning to meet Ultra High Vacuum specs. We are ITAR registered and compliant that ensures your sensitive applications are 100% destroyed on our premises. Contact: Mike Gervais, VP, Mike@GeibRefining.com; Ron Steele, VP, Ron@GeibRefining.com.

**General Atomics Aeronautical Systems Inc.**

#3602

14200 Kirkham Way, Poway, CA, 92064  
+1 858 312 2810; fax +1 858 312 4247  
www.ga-asi.com

**Gentec Electro-Optics Inc.**

#3317

SPIE Corporate Member

445 St-Jean-Baptiste Ste 160, Quebec, QC, Canada, G2E 5N7  
+1 418 651 8003; fax +1 418 651 1174  
info@gentec-eo.com; www.gentec-eo.com

**Featured Product: New this year is our first Touchscreen, color display monitor for power and energy measurement.**

Gentec-EO has over 40 years of experience in the laser measurement field. Our product line includes a complete range of laser power and energy meters, optical detectors, OEM detectors, beam diagnostics and diffractive optics. New this year is the acquisition of Spectrum Detector, which added THz detectors, ultra-fast pyro detectors that measure pulse-to-pulse energy up to 130 kHz, optical TRAP detectors, position sensing systems, ultra-sensitive fJ optical detectors and more. Contact: Charles Vo, Sales Engineer, cvo@gentec-eo.com.

**Georgia Tech Research Institute**

#632

SPIE Corporate Member

260 14th St NW, Atlanta, GA, 30332  
+1 404 407 7479; fax +1 404 407 9479  
www.gtri.gatech.edu

**Featured Product: Active Self Protection state of the art report, IR Imaging & Laser threat databases, EW T&E Handbook.**

GTRI is a university research institute focused on military sensing, including: EO/IR, radar, LIDAR, EO/IR countermeasures, signature control, antenna design, sonar, chemical-biological sensing, and sensor and data fusion among others. GTRI is the home of SENSIAC, the Military Sensing Information Analysis Center, which combines GTRI with several other major university research institutes to provide expertise across the entire spectrum of military sensing. Contact: Rod Beard, SENSIAC Director, rod.beard@gtri.gatech.edu.

**Germanium and Applications Ltd.**

#1337

2/4 Luzhnetskaya quay Bld 64, Moscow, Russia, 119270  
+7 495 926 5174; fax +7 495 639 9352  
Ge@GeApplic.ru; www.geapplic.ru

**Featured Product: Germanium: metal, compounds, blanks & components (windows, lenses, wafers etc). Zinc Selenide.**

Germanium and Applications Ltd. works on the market of materials and chemical products, used in high-technology applications in optics, electronics, chemistry, aerospace equipment, in telecommunications and solar power engineering. Being the biggest Russian producer and exporter of Germanium blanks for optics and electronics, company is one of the leading world producers of Germanium. Contact: Vladimir Vitkov, General Director (CEO), V.Vitkov@GeApplic.ru; RFQ@GeApplic.ru.

**Glass Fab Inc.**

#126

SPIE Corporate Member

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 include annealing, slumping, sawing, grinding, edging, drilling, water jet cutting, CNC shaping and CNC generating. Contact: Daniel Saltzman, President, d\_saltzman@glassfab.com; Wayne Leon, Sales Manager, w\_leon@glassfab.com.

**Gooch & Housego**

#438

SPIE Corporate Member

4632 36th St, Orlando, FL, 32811  
+1 407 422 3171; fax +1 407 658 5412  
sales@goochandhousego.com; www.goochandhousego.com

**Featured Product: OL 770-ADMS Automated Display Measurement System.**

Gooch & Housego is a manufacturer of precision optical components, sub-systems, light measurement instrumentation and services. Our expertise spans a broad range of complementary technologies, including crystal growth, acousto-optics and RF drive electronics, electro optics, fiber optics, optical polishing and coatings, LED test and measurement systems, spectroradiometers, integrating spheres, NIST-traceable calibration standards and services, and spectral imaging and synthesis. Contact: Alex Fong, Sr. VP, Life Sciences & Instrumentation, afong@goochandhousego.com; Jim Dooley, Director, North American Sales, jdooley@goochandhousego.com.



# Exhibitor Directory

## GPD Optoelectronics Corp.

7 Manor Pkwy, Salem, NH, 03079  
+1 603 894 6865; fax +1 603 894 6866  
sales@gpd-ir.com; www.gpd-ir.com

#3307

## Graflex Inc.

15855 Assembly Loop Ste 100, Jupiter, FL, 33478  
+1 561 691 5959; fax +1 561 691 5983  
pganther@graflex.com; www.graflex.com

#3008

### Featured Product: PAN & TILT UNITS 40LB TO 150LB; ZOOM LENSES TO 62X; MUZZLE BORESIGHTS UP TO 155mm WEAPONS.

GRAFLEX INC. is a small, woman-owned business, established in 1993. Our facility, built in 2006, consists of 16,000sq.ft., including an 8,000sq.ft. machine shop facility. Graflex offers an extensive line of ruggedized video zoom lenses and pan & tilt assemblies up to 150 pound capacity. Graflex is the leading producer of muzzle boresights for US weapon systems including the Abrams Tank, CROWS and the Bradley Fighting Vehicle. The boresights cover a range from small arms up to 155mm weapons. Contact: Norm Phillips, VP, nphillips@graflex.com; Paul Ganther, Exec. VP, pganther@graflex.com.

### METER BOARD SPONSOR

## Great River Technology

6121 Indian School Rd NE, Albuquerque, NM, 87110  
+1 505 881 6262; fax +1 505 883 1375  
info@greatrivertech.com; www.greatrivertech.com

#3408

### Featured Product: ARINC 818 dual channel XMC transceiver card and ten channel ARINC 818 switch.

Great River Technology (GRT) specializes in system critical digital video using the ARINC 818 (Avionics Digital Video Bus) and HOTLink protocols. GRT offers a full line of development tools, including protocol analyzers, video recorders, frame grabbers, graphics generators and an ARINC 818 IP core. GRT's products are used in cameras and sensors, cockpit displays, video and mission processors in programs such as C130AMP, F-18, B787, A400M, A350XWB, THAAD, and PROLINE Fusion. Contact: Tim Keller, Director of Marketing, tkeller@greatrivertech.com; Jon Alexander, CEO, jalexand@greatrivertech.com.

## Guangzhou SAT Infrared Technology Co., Ltd.

#1313

Guangzhou Economic & Technological Development Dist, No 10 Dongjiang Ave, Guagnzhou, China, 510730  
+8620 8206 9766; fax +8620 8206 9766  
thomas@sat.com.cn; www.sat.com.cn

### Featured Product: VS640 G96 G95 S280 HotFind-V HotFind-L E8.

SATIR is one of the world's leading civilian thermal imaging system manufacturers, focuses on developing, producing, and marketing of infrared cameras. SATIR considers it the commitment to provide its customers with complete cameras, software, and solutions that can be applied to all fields of applications such as power plant, firefighting, surveillance, petrochemical, automobile, medical, custom, law enforcement, public security and border patrol etc. Contact: Swanie Liang, Manager, Overseas Department, swanie@sat.com.cn; Thomas Wu, Vice General Manager, thomas@sat.com.cn.

## Gulf Photonics, Inc.

SPIE Corporate Member

448 Commerce Blvd, Oldsmar, FL, 34677  
+1 813 855 6618; fax +1 813 855 6627  
photonics@gulffiberoptics.com; www.gulffiberoptics.com/  
photonics.html

#1529

### Featured Product: We offer quick-turn custom fiber assemblies, often in less than 1 week!

Gulf Photonics is a supplier of high quality, quick turn fiber optic assemblies for research and OEM use. We work with fused silica fiber and borosilicate fiber drawn in-house, offering a line of standard patch and bifurcated cables, reflection probes, and accessories, as well as a wide array of options for custom assemblies. Contact: photonics@gulffiberoptics.com.

## Gurley Precision Instruments, Inc.

#214

514 Fulton St, Troy, NY, 12180  
+1 518 266 7719; fax +1 518 274 0336  
sales@gurley.com; www.gurley.com

### Featured Product: GPI 7700 gimbal encoder system provides resolutions of 20+ bits SSI, ±10 arcsec accuracy.

GPI manufactures high-end optical encoders, components and assemblies to the aerospace and defense industries. From design phase to volume runs, we manufacture custom and catalogued components that are designed to meet your specific requirements. Our product line includes; linear and rotary encoders, lenses, windows, mirrors, prisms, reticles, and full coating services for most types of substrates. For more information, stop by our booth or visit our website at www.gurley.com. Contact: Brian Sebastian, Director of Optic Sales, b.sebastian@gurley.com; Chris Guiry, Director of Encoder Sales, c.guiry@gurley.com.

## H.N. Burns Engineering Corp.

#816

3275 Progress Dr Ste A, Orlando, FL, 32826  
+1 407 273 3770; fax +1 407 273 0642  
www.hnbec.com

## Hamamatsu Corp.

#1301

SPIE Corporate Member

360 Foothill Rd, Bridgewater, NJ, 08807  
+1 908 231 0960; fax +1 908 231 1539  
usa@hamamatsu.com; www.sales.hamamatsu.com

Hamamatsu Corporation is the North American subsidiary of Hamamatsu Photonics K.K. (Japan), a leading manufacturer of devices for the generation and measurement of infrared, visible, UV light, and X-rays. These devices include photodiodes, photomultiplier tubes, image intensifiers, CCD, image sensors, and infrared detectors. Hamamatsu also manufactures scientific cameras and systems. Hamamatsu products are used throughout the world in scientific, industrial, and commercial applications. Contact: Engineering Dept, usa@hamamatsu.com.

## Hardin Optical Company

#3400

SPIE Corporate Member

PO Box 219, Bandon, OR, 97411  
+1 541 347 9467; fax +1 541 347 8176  
optics@hardinoptical.com; www.hardinoptical.com

Hardin Optical Co. manufactures precision optical components for commercial and defense applications. We fabricate custom optical elements used in UV, Visible, and IR applications. Our manufacturing facility includes conventional grinding and polishing, diamond turning, and thin film coating capabilities. We take pride in our record of on-time delivery of quality products. Hardin Optical Company was founded in 1976 and employs over 90 people. Contact: Bob Bush, rbush@hardinoptical.com.

**Headwall Photonics, Inc.**

#923

SPIE Corporate Member

601 River St, Fitchburg, MA, 01420  
+1 978 353 4100; fax +1 978 348 1864  
information@headwallphotonics.com;  
www.headwallphotonics.com

**Featured Product: Small Satellite Hyperspectral Sensors; 400-2500nm Airborne Payload.**

Manufacturer of hyperspectral sensors for military and defense. Sensors available for airborne, pan and tilt, and point & stare applications. Spectral ranges of products - UV, Vis, VNIR, NIR, SWIR and MWIR. Core sensor technology: Very small, high performance spectral instruments with high signal-to-noise and high dynamic range for UAV and UGS platforms. Products: Hyperspectral sensors, Raman spectrometers, handheld biosensors, spectral instruments for end-users and integrators. Contact: Kirk Grim, Federal Programs, information@headwallphotonics.com; David Bannon, Sales & Marketing, information@headwallphotonics.com.

**Hellma Materials GmbH & Co. KG**

#3420

Moritz-von-Rohr-Str 1, Jena, Germany, 07745  
+49 3641 2877 234; fax +49 3641 2877 203  
daniel.hahn@hellma.com; www.hellma-materials.com

**Featured Product: Calcium Fluoride crystals, Ytterbium doped Calcium fluoride crystals.**

Hellma Materials produces high-tech materials for various optical applications from deep UV to IR. Continuing the Calcium Fluoride business of Schott Lithotec, we supply to diverse markets including Microlithography, Excimer Laser Optics, Analytical Instrumentation, Astronomy, Defense and more. Contact: Daniel Hahn, Area Sales Manager, daniel.hahn@hellma.com; Dawn Jennings, Sales Representative, dawn@siliconsense.com.

**Hellma USA, Inc.**

#3420

SPIE Corporate Member

80 Skyline Dr, Plainview, NY, 11803  
+1 516 939 0888; fax +1 516 939 0555  
info@hellmausa.com; www.hellmausa.com

**Featured Product: MCS Flex Spectrometer modules-small, light weight for a variety of applications.**

Manufacturer of Hellma Optics, Photometer Cells, Fiber Optic Immersion Probes, Photometric Calibration Standards, Quartz Microplates. Laser Optics include Cylindrical/Flat Optics, Beam Splitters and Mirrors for Laser and other applications. Supplier of Calcium Fluoride material (former Schott Lithotec); Heraeus Light Sources including D2, HCL, PID, Spectral Line; Zeiss MMS/MCS/PGS Miniature Spectrometer modules covering 190-2200nm in combination, Diffraction Gratings. Custom designs of all products. Contact: Ed Roth, Sales Engineer, eroth@hellmausa.com; Dan Fields, Sales Manager, dfields@hellmausa.com

**GENERAL REFRESHMENT SPONSOR****Heraeus Quartz America LLC**

#1105

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

**Hitachi Kokusai Electric America, Ltd.**

#123

150 Crossways Pk Dr, Woodbury, NY, 11797  
+1 516 682 4404; fax +1 516 496 3718  
sales@hitachikokusai.com; www.hitachikokusai.com

**Featured Product: KP-H5010 Long Range, Hi sensitivity, low light camera with fog & smoke reduction.**

The Crucial Imaging Division (CI) of Hitachi Kokusai Electric America Ltd. Manufacturers & sells, miniature, analog & digital cameras & lens that are used in a variety of demanding surveillance applications. World leader in EM-CCD technology for long range low light imaging requirements. Contact: Lawrence Ottaviano, National Sales Manager, larry.ottaviano@hitachikokusai.us; Michele Hamilton, Executive Administrative Assistant, michele.hamilton@hitachikokusai.us.

**Hofstadter Analytical Services**

#1509

SPIE Corporate Member

10 N Norton Ave Ste 120, Tucson, AZ, 85719  
+1 520 747 3282; fax +1 520 577 1761  
www.hofstadteranalytical.com

Hofstadter Analytical Services provides structural, thermal, and multi-physics analysis for laboratory, ground vehicle, aircraft, and space borne systems to a wide variety of industries. Contact: Dan Hofstadter, Principal, dan@hofstadteranalytical.com.

**Hoppe Tool, Inc.**

#216

107 First Ave, Chicopee, MA, 01020  
+1 413 592 9213; fax +1 413 592 4688  
www.hoppetool.com

**Featured Product: Precision Machining - medium to high complexity.**

Hoppe Technologies is an established provider of precision machined components and assemblies to major OEM Defense and Aerospace companies. Celebrating 70 years in business, our company is a recognized leader in medium to highly complex items in quantities ranging from development to production. Our Engineering department provides value added design to cost services as well as concurrent engineering assistance for new programs. Contact: Dan Walker, Manager, Business Development, dwalker@hoppetech.com; Eric Hagopian, President, ehagopian@hoppetech.com.

**IBEO Automotive Systems GmbH**

#3710

Merkurring 60-62, Hamburg, Germany, 22143  
+49 40 298 676 0; fax +49 40 298 676 10  
info@ibeo-as.com; www.ibeo-as.com

**Featured Product: The ibeo laser scanner is a unique full range sensor for object detection and classification.**

Development means improvement...for Ibeo it means consistent optimization Ibeo set standards in laser technology: As technology leader in the development of laser scanners Ibeo offers integrated and operational solutions which can be produced for the demands of our customers. Our team of engineers, physicists and technicians are working constantly on the optimization of our product and application development. Contact: Mario Brumm, Head of Sales, mario.brumm@ibeo-as.com, Julia Döbber, Marketing, julia.doebber@ibeo-as.com.

**Plan to Attend FREE Product Demonstrations**

Refer to pages 24-25 for schedule and location.

# Exhibitor Directory

## ICA Corp.

#1304

12130 Brockton Ln, Minneapolis, MN, 55369  
+1 800 345 2801; fax +1 763 428 4230  
sgoran@icacorp.com; www.icacorp.com

ICA is an ITAR registered, ISO 9001:2008 contract manufacturer providing build-to-print metal component parts & assemblies to the aerospace, scientific instrumentation, medical & electronics industries. Delivering a wide range of capabilities including close tolerance CNC machining, opto-mechanical component machining, custom electronic enclosures, electro-mechanical assembly. Contact: Susan Goran, National Sales Manager, sgoran@icacorp.com; Kevin Schmuhl, Operations Manager, Machining Division, kevin@icacorp.com.

## ID Quantique

#317

Chemin de la Marbrerie 3, Carouge/Geneva,  
Switzerland, CH-1277  
+41 22 301 83 71; fax +41 22 301 83 79  
info@idquantique.com; www.idquantique.com

**Featured Product: id201 single photon counter is optimized for telecom wavelength with quantum efficiency up to 25%.**

ID Quantique is a leader in single photon counting. Its product offering includes photon-counters based on avalanche photodiodes in Geiger mode for the visible and infrared regions. It also includes Telecom short-pulse laser sources (id300). The id100 is a photon counter based on silicon APD for VIS wavelength. The id201 is based on InGaAs/InP APD optimized for telecom wavelength with quantum efficiency up to 25%. The id400 is optimized for detection at 1064 nm. Contact: Michael Desert, Sales Engineer, info@idquantique.com.

## Ideal Aerosmith, Inc.

#838

3001 S Washington St, Grand Forks, ND, 58201  
+1 701 757 3400; fax +1 701 757 3459  
info@ideal-aerosmith.com; www.ideal-aerosmith.com

Ideal Aerosmith, Inc. innovatively engineers, manufactures & sustains world-class motion and electronic test solutions & services. Its cutting-edge products and services comprise precision inertial guidance test systems, rotational tables, centrifuges, high dynamic Hardware-in-the-Loop flight motion simulators, test services including ATE system engineering and quality contract manufacturing. Ideal Aerosmith, Inc.: Providing solutions for mil-aero applications worldwide for more than 70 years. Contact: Dennis Whitehead, Director of Sales and Marketing, dwhitehead@idealaero.com; Brian Stonecipher, Director of Sales - Motion, bstone@idealaero.com.

## II-VI Infrared

#1339

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.

## ImmerVision

#3617

2020 University Ste 2320, Montreal, QC, Canada, H3A 2A5  
+1 514 985 4007; fax +1 514 282 8612  
www.immervision.com

**Featured Product: 360° panomorph optics offer increased all around image resolution customized for any application.**

ImmerVision provides a patented 360° panomorph optics technology that enables any video device to see everything around you. Panomorph technology is the combination of panomorph lenses and immersive viewing functionality, customized for any camera, any sensor and any market. ImmerVision helps OEM and integrators to embed panoramic technology into their vision systems used for applications such as 360° camp surveillance, threat detection, vehicle protection and unmanned reconnaissance. Contact: Gib de Medeiros, Vice-President - Custom Panoramic Applications, gib.demedeiros@immervision.com.



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## Imperx, Inc.

#437

**SPIE**  
Corporate  
Member

6421 Congress Ave Ste 204, Boca Raton, FL, 33487  
+1 561 989 0006; fax +1 561 989 0045  
greg@imperx.com; www.imperx.com

**Featured Product: 29 MP (6600 x 4408) CCD, military grade camera with >660,000 hrs MTBF. CoaXPress, GigE, Camera Link.**

Celebrating 10 years in Boca Raton, Florida, Imperx designs and manufactures rugged Industrial and Military grade visual spectrum CCD based cameras which offer >660,000 hrs MTBF. Imperx cameras are noted for the most advanced and extensive feature sets in the industry. Imperx also makes Camera Link, HD-SDI and NTSC frame grabbers for PCIe, ExpressCard and Cardbus. Contact: Sales, sales@imperx.com; Greg Pangburn, Business Development, greg@imperx.com.

## IMT North America Inc.

#405

11 Bridge St, West Wyoming, PA, 18644  
+1 570 954 0933; fax +1 570 693 3631  
rtrottini@imtmask.com; www.imtag.ch

Supplying your needs for structured coatings and components for ITAR applications, reticles for aiming devices, calibration plates for machine vision, encoder disks and electrically conductive layers, IMT is a world leader in coating technology and microlithography. With over 50 years experience and highly automated processes, high quality and repeatability are guaranteed. We truly are "Precision on Glass". Come and see what we can do for you. Contact: Robert Trottini, Sales Manager, rtrottini@imtmask.com.

## Infinite Graphics

#3406

4611 East Lake St, Minneapolis, MN, 55406  
+1 612 721 6283; fax +1 612 721 3802  
sales@igi.com; www.igi.com

**Featured Product: 3D Resist Imaging, Shims and Molds.**

Infinite Graphics is a precision imaging services and software company. We provide photomasks, imaging services of custom substrates and coatings, thick resist binary masks and 3D sculptured photoresist and shims and molds for lens array manufacturing. Spherical and hexagonal lenses; other shapes are possible. IGI's Phototooling Toolbox software is a hierarchical editor/translator supporting many formats. WYSIWYG photomask display. Contact: Pete Maitland, Sales Manager, pmaitland@igi.com; Cliff Stritch, CEO, cstritch@igi.com.

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## Intevac Photonics, Inc., a subsidiary of Intevac, Inc.

#512

SPIE Corporate Member

3560 Bassett St, Santa Clara, CA, 95054  
+1 408 986 9888; fax +1 408 654 9869  
intevacphotonics@intevac.com; www.intevac.com

Intevac Photonics' divisions Intevac Vision Systems and DeltaNu are the leaders in the development of leading edge, high-sensitivity imaging products, vision systems and miniature Raman instruments. IVS develops imaging technology that combines state of the art photocathode technology with silicon-based digital video technology. DeltaNu is the global leader in small footprint and Raman spectrometers. Markets include military, law enforcement, industrial, physical and life science. Contact: Mike Mohawk, Director of Business Development, mmohawk@intevac.com; Rick Cox, Director of Business Development, rcox@intevac.com.

## IO Industries, Inc.

#3013

SPIE Corporate Member

12-1510 Woodcock St., London, ON, Canada, N6H 5S1  
+1 519 663 9570; fax +1 519 663 9571  
info@ioindustries.com; www.ioindustries.com

**Featured Product: IO Industries announces new models of its solid stated digital video recorder, the DVR Express Core.**

IO Industries Inc., London, ON, Canada, designs digital video recorders and digital video cameras for applications in military/aerospace, manufacturing, scientific and medical research. Our DVR Express Core family of digital video recorders provides SSD-direct recording for many video interfaces including camera link, SDI, GigE Vision, and NTSC. Our new Flare family of video cameras provide high-resolution motion capture with models for 2 MegaPixels at 360fps and 4 MegaPixels at 180fps. Contact: Adam Little, Sales Engineer, sales@ioindustries.com; Andrew Sharpe, info2@ioindustries.com.

## IRCAM GmbH

#1231

SPIE Corporate Member

Nürnberg Str 71, Erlangen, Germany, 91052  
+49 9131 970 098 0; fax +49 9131 970 098 99  
info@ircam.de; www.ircam.de

**Featured Product: The IRCAM ARGOS PV is an IR measurement system for non destructive testing of solar cells.**

IRCAM is a German manufacturer of advanced IR cameras and systems for IR imaging and thermography. IRCAM offers the dual-band and dual-color IR camera series IRCAM GEMINIS for synchronous, pixel-registered acquisition in two bands (MWIR & LWIR) or two small spectral ranges (MWIR & MWIR). Other camera series are the high-speed IRCAM VELOX, the scientific IRCAM EQUUS, the IRCAM TAURUS and the uncooled IRCAM CALEO. Filter wheel, Motor focus and Gigabit Ethernet are available. Contact: Dr. Monica Lopez Saenz, Managing Director, info@ircam.de; Dr. Oliver Schreer, Managing Director, info@ircam.de.

## IRcameras, Inc.

#1213

1600 Providence Hwy, Walpole, MA, 02081  
+1 508 668 5650; fax +1 508 668 5054  
elliott@ircameras.com; www.ircameras.com

**Featured Product: High performance infrared cameras, software, data acquisition and optics.**

IRcameras manufactures high performance infrared cameras for Science, R & D and Surveillance applications. We offer both cooled and uncooled sensors in the SWIR, MWIR, and LWIR spectral bands. We specialize in custom cold shield and IDCA designs. Contact: Mike Larson, VP Business Development, mike@ircameras.com; Elliott Rittenberg, President, elliott@ircameras.com.

## IRD Glass

#3301

SPIE Corporate Member

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

## IRflex Corporation

#1336

SPIE Corporate Member

300 Ringgold Industrial Pkwy, Danville, VA, 24540-5548  
+1 434 483 4304; fax +1 434 793 9200  
irflex@irflex.com; www.irflex.com

**Featured Product: Nonlinear mid-IR fiber to generate and guide mid-IR source, transmission cable, switch, attenuator.**

IRflex produces leading-edge fiber-optic devices that perform key functions in the mid-infrared (2-10 micron): transmission cable, fiber switch, attenuator and source. Our innovative mid-infrared fiber (nonlinear) is specifically designed and manufactured to generate and guide mid-infrared sources over long distances with minimum loss and very high power damage threshold for aircraft missile defense, chemical sensing, biomedical and environmental applications. Contact: Helen Gu, Sales Manager, helen.gu@irflex.com.

## IRnova AB

#107

Electrum 236, Kista, Sweden, SE-16440  
+46 8 793 66 00; fax +46 8 750 54 30  
info@ir-nova.se; www.ir-nova.se

IRnova develop and supply high quality, high performance infrared detectors and related components to infrared module, camera and system manufacturers all over the world. The combination of experienced personnel, long track record with thousands of supplied detectors and well-established manufacturing process with high yield and capacity results in cost-effective production and deliveries of high quality and reliable performance detectors. Contact: Lars Karlsson, VP Sales & Marketing, lars.karlsson@ir-nova.se; Anders Gamfeldt, Application Engineer, anders.gamfeldt@ir-nova.se.

## IRZoom.com

#1113

120 Derry Rd, PO Box 240, Hudson, NH, 03051  
+1 603 889 2116; fax +1 603 889 2393  
info@IRZoom.com; www.IRZoom.com

**Featured Product: Products include LWIR, MWIR, broadband (SWIR-MWIR) & athermalized IR lenses. Stock & Custom lenses.**

IRZoom is a US-based designer and manufacture of stock and custom SWIR, MWIR, LWIR, broadband and visible lenses. We are a division of Computer Optics, Inc. As a vertically-integrated company, our lenses are designed, manufactured and fully supported by an elite team, under one roof. We take each project from optical and optomechanical design through polishing, coating, machining and full integration with the camera. Please visit us to discuss your next project. Contact: Jonathan S. Kane, PhD, President, jon@computeroptics.com; Brian Stuart, Senior Optical Engineer, brian@irzoom.com.



## Free Popcorn

Palms and Cypress Exhibition Halls

Popcorn carts will be open Tuesday and Wednesday from 11:00 am to 3:00 pm; Thursday from 11:00 am to 2:00 pm.



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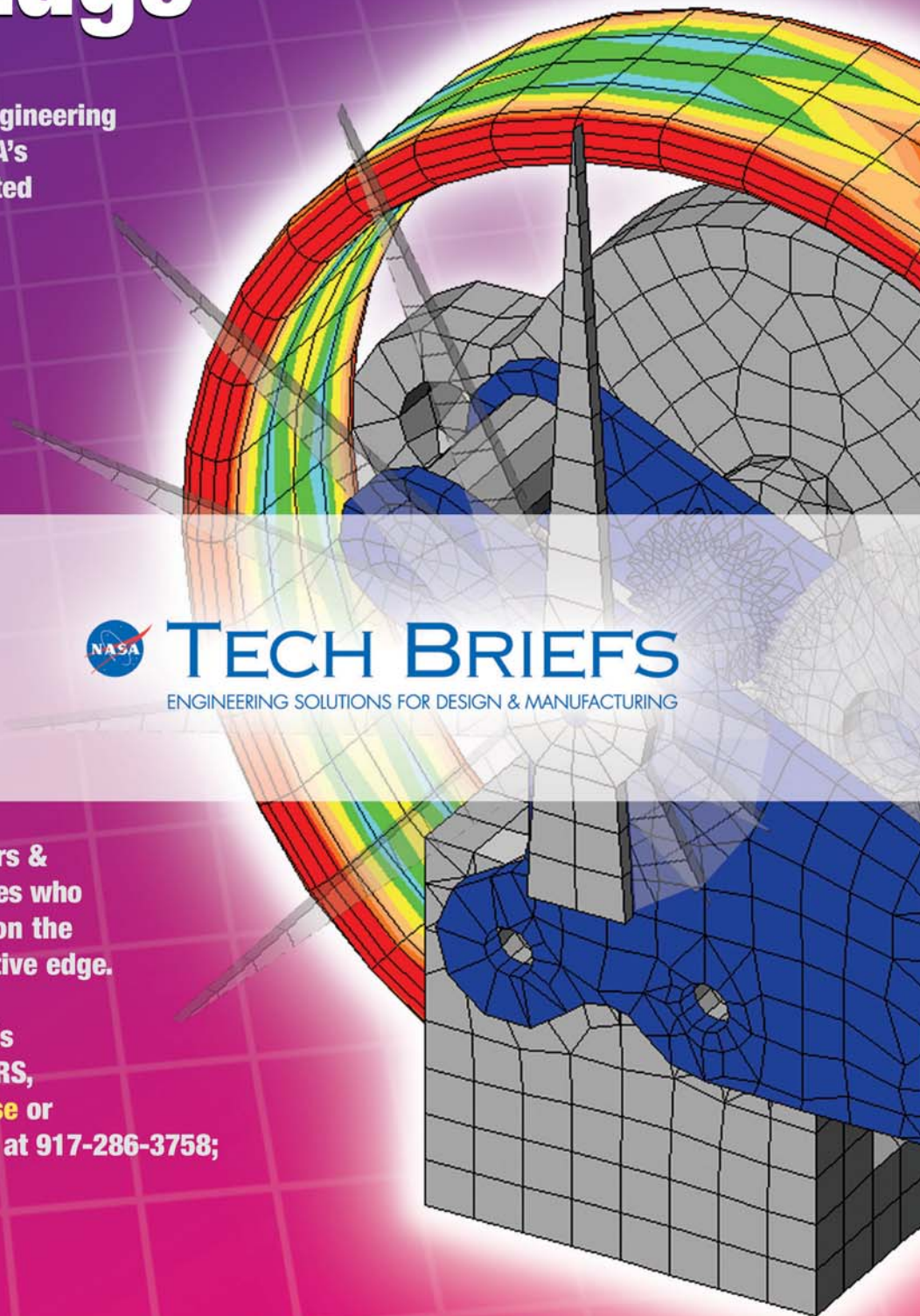
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# Exhibitor Directory

## ISP Optics Corp.

SPIE Corporate Member

1 Bridge St Ste 205, Irvington, NY, 10533  
+1 914 591 3070; fax +1 914 591 3715  
sales@isoptics.com; www.isoptics.com

**Featured Product: A unique MWIR 15 – 330 mm F/4 continuous zoom lens for short distance cold shield detectors.**

All in-house solutions at ISP Optics: Design, manufacture, coating and metrology. We offer quality engineering expertise in high precision IR optics, design services, and optical assemblies. Infrared Catalog & custom optics, standard and custom IR assemblies are available. IR high performance zoom lens sub-assemblies are designed for cooled and un-cooled cameras. For design and manufacturing expertise, partner with ISP Corporation for optimal solutions from prototypes to volume production. Contact: Virginia Baker, Office Manager, vbaker@isoptics.com; Devaunshi Sampat, VP Marketing & Sales, dsampat@isoptics.com.

## ITT Visual Information Solutions

#3016

4990 Pearl East Circle, Boulder, CO, United States, 80301  
+1 303 786 9900; fax +1 303 786 9909  
info@ittvis.com; www.ittvis.com

Visit ITT to learn how our software products provide technologically advanced solutions for defense and intelligence professionals to turn imagery and data into actionable intelligence. See ENVI's automated tools for fast topographic imagery analysis, including land cover classification, target identification, change detection, and feature extraction. And learn to use IDL to easily customize ENVI and to create meaningful visualizations from large complex datasets. www.ittvis.com

## JAI, Inc.

#3416

625 River Oaks Pkwy, San Jose, CA, 95134  
+1 408 383 0300; fax +1 408 383 0301  
camerasales.americas@jai.com; www.jai.com

**Featured Product: Demos include a unique 3-CCD 180° camera and a 1.4-megapixel camera with dawn-to-dusk sensitivity.**

JAI's camera technology includes compact, feature-rich interlaced cameras for traditional analog applications, high performance digital cameras with multi-megapixel resolution, and specialized Gen III Ultra night vision cameras. JAI-brand and PULNiX-brand cameras feature enhanced resistance to harsh environments and are widely used for demanding defense, aerospace, and homeland security applications including high-end surveillance, situational awareness, weapons aiming, and many others. Contact: Ken Zinsli, Director, Business Development, kwz@jai.com.

## Janos Technology, LLC

SPIE Corporate Member

55 Black Brook Dr, Keene, NH, 03431  
+1 603 757 0070; fax +1 603 757 0069  
sales@janostech.com; www.janostech.com

Janos Technology is a leader in the design and manufacture of high performance infrared imaging systems and components that meet the stringent performance and environmental requirements of defense and security applications. With a highly skilled engineering team, state-of-the-art in-house coating capability and advanced high volume manufacturing technology such as MRF Janos provides complete solutions from design through full rate production. Contact: Milan Zeman, Business Development, mzeman@janostech.com; Matt Hebert, Defense Assembly Product Manager, mhebert@janostech.com.

#531

## JDSU

SPIE Corporate Member

430 N McCarthy Blvd, Milpitas, CA, 95035  
+1 408 546 5000; fax +1 408 546 4300  
info@jdsu.com; www.jdsu.com

Designer, developer and manufacturer of high performance optical coatings covering the spectral range of 220nm up to 25microns, and serving the defense, aerospace, imaging, instrumentation, and display markets. JDSU Custom Optics provides high precision and high customization leveraging decades of experience in coating design, thin film deposition, optics fabrication, and metrology to meet the most demanding requirements. Contact: Nada O'Brien, Product Manager, nada.obrien@jdsu.com.

## JENOPTIK Optical Systems, Inc.

#335

SPIE Corporate Member

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

**Featured Product: IR aspheric optics and micro optics, diamond turned, MRF polished and lithographically etched.**

JENOPTIK Optical Systems, Inc. offers a unique breadth of manufacturing and design capabilities which include optical lens assemblies, optical components, refractive and diffractive microoptics manufactured with wafer level techniques, and molded polymer optics. JENOPTIK is a development and production partner for optical modules and systems- made from glass, crystalline and polymers for applications ranging from UV through LWIR. Contact: Ray Malcom, VP Sales & Marketing, ray.malcom@jenoptik-inc.com; Joel Murphy, Business Development, IR Components, joel.murphy@jenoptik-inc.com.

## JEOL USA, Inc.

#3706

SPIE Corporate Member

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

**Featured Product: Analytical, portable, LV/HV SEM: multi-touch screen interface, integrated EDS & SDD technology.**

JEOL is a leading global supplier of SEMs, TEMs, ion beam instruments, semiconductor equipment, sample prep tools, & analytical instrumentation. Scientists engaged in high-level R&D & routine investigations use JEOL instruments to support discoveries in national defense, virology, biological & medical research, drug discovery & genomics, forensics, failure analysis, nanotechnology, & novel materials. JEOL also provides applications & customer expertise across the USA, Canada, Mexico, & Brazil. Contact: Ron Snow, Sales Manager, JEOL USA, snow@jeol.com; Richard Lois, National Sales Manager, JEOL USA, lois@jeol.com.

## JEOL USA, Inc. - Display

#3707

SPIE Corporate Member

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



**JML Optical Industries Inc.****#3403**

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 lenses and sub assemblies. Precision optics and coatings.**

JML Optical is a designer, manufacturer and coater of precision optical components and systems. We supply optics for biomedical, defense, inspection, security, scanning, aerial photography and other applications requiring precision optics. Multi element sub assemblies are our specialty. Contact: Marty Roberts, Director of Sales, martyr@jmloptical.com; Fred Costanza, OEM Sales Engineer, fredc@jmloptical.com.

**Kent Optronics, Inc.****#1134**

40 Corporate Park Dr, Hopewell Junction, NY, 12533  
+1 845 897 0138; fax +1 845 897 0603  
info@kentoptronics.com; www.kentoptronics.com

**Featured Product: Multispectral Polarized Scene Projector: active spatial, spectral, bandwidth & polarization control.**

Kent Optronics is specialized in advanced electro-optical product and technology development by leverage on our world-class liquid crystal technologies, emphasizing on spectrum flexibility, efficiency and speed. We offer a diverse range of products to the U.S defense and industry customers in photonics, IR scene generation for hardware-in-the-loop simulation, laser protection, remote sensing and glazing sectors. We also offer customized solutions and prototypes for the designated applications. Contact: Eva Sun, Marketing Manager, ysun@kentoptronics.com; Le Li, CEO, leli@kentoptronics.com.

**CONFERENCE BAG INSERT SPONSOR****Kentek Corp.****#203**

**SPIE** Corporate Member

1 Elm St, Pittsfield, NH, 03263  
+1 603 223 4900; fax +1 603 435 7441  
info@kenteklaserstore.com; www.kenteklaserstore.com

**Featured Product: The "KPG" Premium Goggle features polycarbonate 11-base wrap design with superb peripheral vision.**

Shop Kentek for innovative laser safety products including eyewear, barriers, curtains, windows, beam dumps and beam viewers. We specialize in custom products and will gladly make that "one of a kind" product to meet your demanding specifications. Choose from hundreds of laser eye protection filters and two dozen available frame styles. Home of Zap-It and View-It products. Stop by our booth at SPIE Defense 2011 to see the new orange, blue and red View-It beam detector products.

**Keopsys Inc.****#1335**

1195 Pennsylvania Ave, Bethlehem, PA, 18018  
+1 610 758 8428; fax +1 610 758 8426  
webslaes@keopsys.com; www.keopsys.com

**Featured Product: KULT: The Keopsys Ultra-compact Laser Transmitter now available at 1995nm, 1550nm, 1064nm and 532nm.**

Keopsys manufactures a large range of standard and custom-designed optical fiber amplifiers and lasers for fiber and free space optical communication systems, LIDAR, remote sensing, spectroscopy and R&D. High output powers are achieved through the use of double cladding fibers pumped by broad stripe diodes. Contact: Yves, Sales Manager - West Coast, ydeiss@keopsys.com; Alexandre Amavigan, Sales Manager - East Coast, aamavigan@keopsys.com.

**Kigre, Inc.****#1031**

**SPIE** Corporate Member

100 Marshland Rd, Hilton Head Island, SC, 29926  
+1 843 681 5800; fax +1 843 681 4559  
kigreinc@cs.com; www.kigre.com

**Featured Product: HESP-E-7-60 compact eye-safe 6-10mj, 10-60Hz 1535nm laser suitable for ranging, imaging & LIBS.**

Kigre manufactures High Efficiency Side Pump, (HESP) Diode Pumped Solid State (DPSS) Lasers and components. Compact eye-safe high power diode pumped 1.5µm lasers are suitable for laser range-finding, range-gated imaging and LIBS. The MK-11 & 81 (1Hz), MK-85 & 88 (10Hz) MK-830 (30Hz) and HESP-E-7-60 (60Hz) are 1535nm Q-switched laser products based upon conduction cooled High Efficiency Side Pump, (HESP) Diode Pumped Solid State Lasers (DPSS) technology. Contact: Michael J. Myers, President, kigreinc@cs.com; Jeffrey A. Myers, COO, jeffmyers@hargray.com.

**KiloLambda Technologies, Ltd.****#3303**

**SPIE** Corporate Member

22a Raoul Wallenberg St, Tel-Aviv, Israel, 69719  
+972 3 649 7662; fax +972 3 649 7665  
hadas@kilolambda.com; www.kilolambda.com

**Featured Product: The WPF is a passive, wavelength independent filter. One filter blocks all lasers.**

KiloLambda's patented nano-technology based optical layer is designed to protect the human eye as well as optical sensors from damage, which may be caused by high power destructive light sources, such as lasers. KiloLambda's layers can improve the dynamic range of imaging systems utilizing their limiting capabilities. KiloLambda's layers are used in binoculars, sights, communication systems etc. Contact: Karin Golding, VP Marketing & Business Development, karin@kilolambda.com; Hadas Vilensky Gerlitz, Marketing Manager, hadas@kilolambda.com.

**Kopin Corp.****#400**

225 Technology Cir, Scotts Valley, CA, 95066  
+1 831 430 0688  
ruggedsolutions@kopin.com; www.kopin.com

**Kovatch Castings****#1417**

3743 Tabs Drive, Uniontown, OH, 44685  
330 896 9944; fax 330 896 3444  
jkleinhenz@kovatchcastings.com; kovatchcastings.com

**Featured Product: Precision Investment Casting in wide range of alloys: Aluminum, Stainless, Steel, Alloy, Bronze.**

USA manufacturer of custom cast components for a variety of industries. AS9100B, ISO 9001:2008, and NADCAP certified since 2002. Currently employ over 100 years combined engineering experience, with unmatched customer service. Contact: John Kleinhenz, Regional Manager, jkleinhenz@kovatchcastings.com; Tony Mazza, Sales Agent, tlmcustomcomps@msn.com.

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## **Kowa Optimed, Inc.**

**#3101**

20001 S Vermont Ave, Torrance, CA, 90502  
+1 310 327 1913; fax +1 310 327 4177  
kowa-usa-info@kowa.com; www.kowa-usa.com

### **Featured Product: IR Corrected Zoom Lenses for surveillance applications.**

Kowa is a high-end manufacturer of quality optics and CCTV lenses with over 50 years of lens manufacturing experience. Large selection of zoom, IR, high resolution and megapixel lenses for border security and long range surveillance applications. Contact: Andrew Kam, Sales Consultant, andrew@kowa.com.

## **Kurt J. Lesker Company**

**#307**

1925 Route 51, Clairton, PA, 15025  
+1 412 387 9200; fax +1 412 384 2745  
sales@lesker.com; www.lesker.com

R&D and batch production tools for the optical, photonics, and photovoltaic industries. Manufacturer of automated vacuum deposition tools for PVD and ALD, chambers, components, film deposition sources, & pure materials. Products include: electron beam evaporation sources; thermal evaporation sources, including low temp sources for organic films; R&D & production-sized magnetron sputter sources; variety of feed throughs; pumps; valves; pressure/flow measurement devices. ITAR certified. Contact: Joe DeMaio, Inside Sales Mgr - US, salesus@lesker.com.

## **Kyocera America Inc.**

**#1434**

8611 Balboa Ave, San Diego, CA, 92123  
+1 858 576 2600  
kaicorp@kyocera.com; www.kyocera.com/packaging

## **L.A. Gauge Company**

**#118**

7440 San Fernando Rd, Sun Valley, CA, 91352  
+1 818 767 7193; fax +1 818 767 4946  
www.lagauge.com

### **Featured Product: Ultra-precision machining of material including Beryllium and polishing metal optics.**

L.A. Gauge has set the standard for ultra precision machining of exotic materials including Beryllium. L.A. Gauge is the #1 producer of Aluminum Beryllium components worldwide and a leading producer of Beryllium components for the aerospace, defense, and optics industries. Its capabilities include close tolerance machining of substrates, nickel plating, and polishing metal optics to 1/10 wave and 20 RMS. Contact: Brian Walters, Sales Manager, sales@lagauge.com; Dale Hostetter, Contracts, dhostetter@lagauge.com.

## **L-3 Cincinnati Electronics**

**#902**

150 N San Gabriel Blvd, Pasadena, CA, 91107-3426  
+1 626 395 7460; fax +1 626 395 7490  
IRProductsSales.CE@L-3Com.com; www.L-3Com.com/ce

L-3 Cincinnati Electronics, located in Pasadena, California supplies linear drive amplifiers and cryogenic coolers that empower designers with on-demand refrigeration for controlling thermodynamics events. This ultimate control delivers peak efficiency, extended life, lower power and reduced audible noise and allows the optimized design and utilization of the many newer superconductive materials used in long range, large format IR sensors.

## **L-3 Cincinnati Electronics**

**#902**

**SPIE** Corporate Member  
7500 Innovation Way, Mason, OH, 45040-9699  
+1 513 573 6744; fax +1 513 573 6290  
glenna.debo@l-3com.com; www.l-3com.com/ced

L-3 Cincinnati Electronics, located in Mason, Ohio supplies mission critical infrared imaging technologies for defense and homeland security operations. CE's advanced sensor technology provides the ability to detect targets through obscurants, in adverse weather, and under zero illumination. The inherent performance of our staring InSb MWIR sensors provide the strategic advantage to rapidly classify and engage emerging asymmetric threats - offering smaller pixels on a tighter pitch for unmatched high definition reconnaissance, persistent surveillance and target acquisition.

## **L-3 Communications**

**#902**

**SPIE** Corporate Member  
600 Third Ave, New York, NY, 10016  
+1 513 573 6744; fax +1 513 573 6290  
glenna.debo@l-3com.com; www.l-3com.com

L-3 Communications is a prime contractor in Command, Control and Communications, Intelligence, Surveillance and Reconnaissance (C3ISR), Government Services, Aircraft Modernization and Maintenance (AM&M) and has the broadest base of Specialized Products in the industry. L-3 is also a major provider of homeland defense products and services for a variety of emerging markets. Contact: Glenna Debo, Manager, Marketing Administration, Glenna.Debo@L-3Com.com; Phil Hansel, Manager, Marketing Administration, Phil.Hansel@L-3Com.com.

## **L-3 Communications, EOS Division**

**#902**

3414 Herrmann Dr, Garland, TX, 75041  
+1 972 840 5629; fax +1 972 271 2195  
eos.sales@l-3com.com; www.l-3nightvision.com

Leading supplier of Electro Optical, Thermal and Applied Optics technologies ensuring security/freedom of U.S. and allies. L-3 EOS' products encompass multiple applications and environments equipping warfighter, law enforcement agent, firefighter or security professional with Total Night Vision Solution. Hand Held, Head Mount, Weapon Mount, or Vehicle Mount night vision, EOS customers dominate their field of battle bringing them out of the dark, into the fight! Contact: Roy Lewis, Director, Business Development, Roy.Lewis@L-3com.com; David Rediger, Director, Channel Sales, David.Rediger@L-3com.com.

## **L-3 Communications/Advanced Laser Systems Technology (ALST)**

**#902**

2500 N Orange Blossom Trail, Orlando, FL, 32804  
+1 407 722 5512; fax +1 407 770 2984  
marketing.alst@l-3com.com; www.l-3com.com/alst

L3 ALST: Military grade Eyesafe Laser Rangefinder, Laser Designator & Multi-function Laser systems. Part of L-3 Communications, Advanced Laser Systems Technology (L3 ALST) is an ISO 9001 certified, cost effective designer & manufacturer of LRUs and OEM modules. With more than two decades experience, ALST has designed and delivered thousands of lasers in over 50 product configurations for customer applications spanning "Submarines to Satellites", including shipboard, ground & airborne systems. Contact: Jeremy Hickman, VP, Business Development, jeremy.hickman@L-3com.com.

**L-3 Nova Engineering****#902**4393 Digital Way, Mason, OH, 45040  
+1 513 204 7600; fax +1 513 204 8999

Info.Nova@L-3Com.com; www.L-3Com.com/Nova

L-3 Nova's wireless data communication technologies include remote imagery systems, mobile ad hoc wireless routers, coin-sized UHF transceivers, miniature SATCOM, and fusion-enabled smart sensors. RF micro-miniature assembly techniques produce size/power/weight optimized devices for specialized applications. Engineering Design Services with unparalleled expertise in communications systems and advanced waveform design, including software-defined-radios, augments Nova's COTS products. Contact: Nicole Beckwith, Manager, Marketing Communications/ECC, Nicole.Beckwith@L-3Com.com; David Maldonado, Business Development/Adv. Technologies, David.Maldonado@L-3Com.com.

**Labsphere, Inc.****#3109**

SPIE Corporate Member

231 Shaker St, PO Box 70, North Sutton, NH, 03260-0070

+1 603 927 4266; fax +1 603 927 4694

labsphere@labsphere.com; www.labsphere.com

Labsphere has provided innovative light metrology technology since 1979, producing test and measurement systems for sensor calibration, diffuse reflectance materials, and reflectance spectroscopy accessories, and light measurement equipment. Products include uniform light sources to calibrate imaging devices and camera systems in the visible and IR; light measurement systems for lasers, LEDs, and other light sources; and reflectance standards for calibrating spectroscopic measurement systems. Contact: Chris Durell, Vice President Sales, cdurell@labsphere.com; Brian Lai, Eastern US Regional Sales Manager, blai@labsphere.com.

**Labtec Sales Partners LLC****#1416**

735 Arlington Ave N Ste 103, St. Petersburg, FL, 33701

+1 727 560 1154

www.labtecsp.com

**Featured Product: Seller and Distributor of Thin film Processing and Microlithography Systems.**

A global sales and distribution partner for companies who provide equipment for microlithography and thin film processing. We can provide complete processing solutions for our customers or simple process tools that the customers can integrate into their existing processing lines. Additionally, we work with leading providers of support equipment for all our products, so we can provide our customers with all that they need to get up and running. Contact: Jay Sasserath, CEO, jays@labtecsp.com; Frank Lowry, VP, Sales, frank@labtecsp.com.

**LaCroix Optical Co.****#330**

SPIE Corporate Member

PO Box 2556, Batesville, AR, 72503

+1 870 698 1881; fax +1 870 698 1880

lacroix@lacroixoptical.com; www.lacroixoptical.com

**Featured Product: Custom Precision 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: David Cossey, Manufacturing Engineer, david@lacroixoptical.com; Tom Cox, Manufacturing Engineer, tom@lacroixoptical.com.

**Lake Shore Cryotronics, Inc.****#1409**

575 McCorkle Blvd, Westerville, OH, 43082

+1 614 891 2244; fax +1 614 818 1600

info@lakeshore.com; www.lakeshore.com

**Featured Product: New 8400 series AC/DC field Hall effect measurement system (HMS).**

Lake Shore Cryotronics is an international leader in developing innovative measurement and control solutions. Products include cryogenic temperature sensors and instrumentation, and magnetic test equipment, as well as metrology system and probe stations used for characterizing the physical properties of materials. The 8400 series Hall effect measurement system, with the unique AC field Hall measurement option, allows you to characterize materials with mobilities down to 0.001 cm<sup>2</sup>/Vs with ease. Contact: Lake Shore Sales, sales@lakeshore.com.

**Lambda Research Optics Inc.****#630**

SPIE Corporate Member

1695 W MacArthur Blvd, Costa Mesa, CA, 92626

+1 714 327 0600; fax +1 714 327 0610

lambda@lambda.cc; www.lambda.cc

**Featured Product: BaF<sub>2</sub> and CaF<sub>2</sub> spherical lenses with up to 7.0" diameter and AR coating @ 3-5 μm region.**

Lambda is a leading manufacturer of optics for the aerospace and defense industries. Lambda offers custom prisms, coatings for thermal imaging optics, custom lenses and high power optics for 1064nm and 1573nm. Lambda is committed to delivering high quality optics on time. Contact: Jae Oh, Marketing Manager, joh@lambda.cc; James Choi, Sales Manager, jchoi@lambda.cc.

**METER BOARD SPONSOR****Laser Components IG, Inc.****#631**

SPIE Corporate Member

9 River Rd, Hudson, NH, 03051

+1 603 821 7040; fax +1 603 821 7041

info@laser-components.com; www.lasercomponents.com

**Featured Product: A New Benchmark in Photon Counting: record-breaking dark count rates and highest quantum efficiency.**

Provides high power laser optics from 193nm to 10.6μm. IR lead salt diode lasers (3-25μm) & SPCDILAS diode lasers in the range of 750-2050nm, including VCSELs & DFBs. Quantum Cascade Lasers and Flexpoint miniature laser modules available. Glass polarizing filters, fiberoptic assemblies and color sensors. Spectroscopic instrumentation-NIR SPECTROMETERS, Echelle spectrum analyzers, Avalanche Photo Diodes and Pulsed Laser Diodes. Contact: Matt Robinson, Sales Engineer, robinson@laser-components.com; Paul Buettner, Sales Engineer, buettner@laser-components.com.

**Symposium-Wide Plenary Presentation****Open to All Attendees**

Exhibition visitors, exhibitors, and technical conference attendees

**Dr. Regina E. Dugan**

Director, Defense Advanced Research Projects Agency (DARPA)

Tuesday 26 April · 8:30 to 9:30 am  
Crystal H, See page 16 for details



# Exhibitor Directory

## PROMOTIONAL PARTNER

### Laser Focus World

#304

SPIE Corporate Member

98 Spit Brook Rd, Nashua, NH, 03062  
+1 603 891 0123; fax +1 603 891 0574  
jeffn@pennwell.com; www.laserfocusworld.com

### Laser Operations LLC/QPC Lasers

#1202

SPIE Corporate Member

15632 Roxford St, Sylmar, CA, 91342  
+1 818 986 0000; fax +1 818 698 0428  
info@laseroperations.net; www.qpclasers.com

#### Featured Product: Laser Operations LLC introduces QPC Lasers BrightLock® 88X nm for DPSS in module and stack platforms.

Laser Operations LLC, manufacturer of the industry leading QPC Lasers product line, is a vertically integrated laser diode manufacturer shipping high brightness lasers globally into several markets including medical, defense, industrial and consumer displays, from its high volume 40,000 sq. ft. laser manufacturing facility located in Sylmar, CA. Contact: Laurent Vaissie, Senior Vice President of Marketing and Sales, lvaissie@laseroperations.net; Merrill Apter, Vice President of Business Development, mapter@laseroperations.net.

### Laser Optics a PPGI company

#322

SPIE Corporate Member

181 Legrand Ave, Northvale, NJ, 07647  
+1 201 767 1910; fax +1 201 767 9644  
sales@ppgiptics.com; www.ppgioptics.com

Manufacturer of Optics, Coatings & Sub Assemblies for Military, Industrial & Medical applications. Components from glass, fused silica, zinc selenide, silicon & germanium include plano, spherical & prismoid optics. Custom fabrication of mirrors, lenses, prisms, waveplates & cavity optics. Specialists in coatings for high power lasers. Contact: Jeffrey Brunner, Director of Sales & New Business Development, jbrunner@ppgiptics.com; George Murray, West Coast Sales Manager, gmurray@ppgiptics.com.

### Laser Research Optics

#1224

120 Corliss St, Providence, RI, 02904  
+1 401 331 3838; fax +1 401 331 4004  
sales@laserresearchoptics.com; www.laserreacher.net

Laser Research Optics supplies CO<sub>2</sub> laser optics for 25 to 200 watt lasers, factory direct and optimized for 10.6 micron. Featured are ZnSe positive focusing lenses in plano-convex, plano-concave, and meniscus configurations in 1/2" to 2" dia., focal length 1" to 20". CO<sub>2</sub> laser turning mirrors offered are made from molybdenum for harsh environments; other mirrors include copper, dual band, silicon and phase retardation. These OEM quality replacement optics ship from stock within 12 hours. Contact: Scott Rouillard, Sales, scott@melleroptics.com; Steve Lydon, Sales, steve@melleroptics.com.

### Laser Technology, Inc.

#1404

7070 S Tucson Way, Centennial, CO, 80112  
+1 303 649 1000; fax +1 303 649 9710  
info@lasertech.com; www.lasertech.com

Whether it's liquid and solid leveling, inline positioning, scanning, counting or profiling, LTI laser measurement sensors can quickly deliver accurate distance, level and proximity measurements for the industrial arena. Our rugged lasers are made to perform time after time, even under the challenging conditions typically seen in industrial plants. Contact: info@lasertech.com.

### LaserMax, Inc.

#208

3495 Winton Pl S, Rochester, NY, 14623-2824  
+1 585 272 5420; fax +1 585 272 5427  
cwalton@lasermax.com; www.lasermax.com

### LaserMotive LLC

#3700

19645 70th Ave S, Kent, WA, 98032  
+1 253 872 3300  
billing@laser motive.com; www.laser motive.com

#### Featured Product: Laser power beaming hardware (transmitters and receivers) with sample implementations.

LaserMotive researches, designs, fabricates, and fields laser power beaming systems that can deliver watts to kilowatts of electric power to stationary receivers or moving vehicles, over distances of more than a kilometer, indefinitely. Our laser power beaming solutions deliver power wherever wires are impractical or uneconomical. LaserMotive's systems have been used to win the 2009 NASA Power Beaming competition and to demonstrate extended endurance of a small electric quadcopter. Contact: Tom Nugent, President, tom.nugent@laser motive.com; David Bashford, VP Operations, david.bashford@laser motive.com.

### LaserMotive LLC - Display

#3701

19645 70th Ave S, Kent, WA, 98032  
+1 253 872 3300  
billing@laser motive.com; www.laser motive.com

### Lasertel Inc.

#1123

SPIE Corporate Member

7775 N Casa Grande Hwy, Tucson, AZ, 85743  
+1 520 744 5700; fax +1 520 744 5766  
sales@lasertel.com; www.lasertel.com

Lasertel is a vertically-integrated semiconductor laser manufacturer. In-house epitaxy, wafer processing and packaging enables consistent delivery of a wide range of standard and customer-specific product solutions. Lasertel's chips, bars, array packages and fiber-coupled devices are available with peak wavelengths from 770nm to 1000nm, and peak powers from 200mW to several kW. Contact: Marie Grabe, Sales Coordinator, mgrabe@lasertel.com; Robert Walker, Director of Sales & Marketing, rwalker@lasertel.com.

### Lattice Materials LLC

#408

516 E Tamarack St, Bozeman, MT, 59715  
+1 406 586 2122; fax +1 406 587 9055  
marketing@latticematerials.com; www.latticematerials.com

#### Featured Product: Silicon and Germanium Infrared Optics.

Lattice Materials is an American company that produces infrared optics out of silicon and germanium. The company also produces laser mirrors and thin film sputtering targets. We have the ability to create special parts for the solar and semiconductor industries and perform crystal growth with custom resistivity to your specifications. Contact: Joe Anderson, Inside Sales, joea@latticematerials.com; Mike Foster, Account Manager, mikef@latticematerials.com.

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### LE-Tehnika d.o.o., Kranj

#3600

Suceva 27, Kranj, Slovenia, 4000  
+386 4 20 20 200; fax +386 4 204 21 22  
info@le-tehnika.si; www.le-tehnika.com

**Featured Product: Cryogenic JT minicoolers, Stirling coolers and pure air monitors.**

Development and production company, with strong R&D team, capable for designing, mathematical calculations and production. We have serial products and can do also custom design. Monthly output of app. 1000 units of JT coolers. Contact: Franc Megusar, Director of Cryogenic Department, franc.megusar@le-tehnika.si; Janez Klancar, International Sales, janez.klancar@le-tehnika.si.

### Leybold Optics

#111

**SPIE** Corporate Member

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

Since its foundation in 1851, Leybold has remained at the forefront of vacuum technology and is responsible for key inventions and developments. Leybold's philosophy is to provide the most advanced and reliable sputtering and evaporation tools for production with the best performing and most durable coatings. Contact: Tobias Haecker, Regional Sales Manager, tobias.haecker@leyboldoptics.com.

### LightPath Technologies, Inc.

#426

**SPIE** Corporate Member

2603 Challenger Tech Ct Ste 100, Orlando, FL, 32826  
+1 407 382 4003; fax +1 407 382 4007  
sales@lightpath.com; www.lightpath.com

### LightWorks Optics, Inc.

#1308

**SPIE** Corporate Member

14242 Chambers Rd, Tustin, CA, 92780  
+1 714 247 7100; fax +1 714 247 7101  
info@lwoptics.com; www.lwoptics.com

Since 1997, LightWorks Optics, Inc. has been the Defense industry's top choice for meeting their mission-critical optical needs. Highly responsive, with a proven track record in specification definition, world-class design, prototyping, testing, assembly and production, our skilled team of experts deploy precision technologies to ensure superior results on time, and within budget. LightWorks Optics is a classified Department of Defense and ISO 9001:2008 registered facility. Contact: Lisa Belodoff, Director of Marketing, lbelodoff@lwoptics.com.

### Liteye Systems Inc.

#215

7060 S Tucson Way Ste A, Centennial, CO, 80112  
+1 720 974 1766; fax +1 720 596 5219  
rsondag@liteye.com; www.liteye.com

### Lockheed Martin - Santa Barbara Focalplane

#3517

346 Bollay Dr, Goleta, CA, 93117  
+1 805 571 2300; fax +1 805 571 2352  
sbfp@sbfp.com; www.sbfp.com

## Lockheed Martin Aculight

#3517

SPIE Corporate Member

22121 20th Ave SE, Bothell, WA, 98270  
+1 425 482 1100; fax +1 425 482 1101  
info.dp.ms2-bothell@lmco.com; www.aculight.com

LMAculight provides quality, innovative & cost-effective laser system solutions for customers' needs in defense, aerospace & medical apps. Our products include lightweight, compact, high-performance fiber lasers for laser radar and sensing. We also provide custom laser solutions. Products include: Aculight® Perseus™ pulsed fiber lasers with 1.5- $\mu$ m output; Aculight Telesto™ pulsed fiber lasers with 1- $\mu$ m output; Aculight Argos™ optical parametric oscillators for spectroscopy and sensing. Contact: Dr. Robert Afzal, Sr. Fellow, robert.afzal@lmco.com; Mark Bendett, Director, mark.bendett@lmco.com.

## LumaSense Technologies, Inc

#1405

3301 Leonard Ct, Santa Clara, CA, 95054  
+1 408 727 1600; fax +1 408 727 1677  
www.lumasenseinc.com

**Featured Product: The Pearl is a flexible, compact, low cost modular thermal imager for a wide range of applications.**

LumaSense Technologies provides temperature and gas sensing solutions that optimize the performance of equipment and environments. We are a trusted partner to end-users and OEMs, drawing on our proven technologies and deep industry experience, we develop infrared and fiber optic temperature sensors, radiometric thermal imagers and gas analyzers. Located in Asia, Europe and the Americas, LumaSense serves the needs of the industrial, energy, and clean technology markets worldwide. Contact: Andy Beck, Director NA Sales, a.beck@lumasenseinc.com; Bret Sargent, Vice President Global Sales, b.sargent@lumasenseinc.com.



METER BOARD SPONSOR

## Materion Corporation

#3601

14710 W Portage River S Rd, Elmore, OH, 43416-9502  
+1 419 862 4173; fax +1 419 862 4174  
www.materion.com

**Featured Product: Visit Booth 3601 to learn more about our Non-Beryllium Metal Matrix Composite – SupremEX™.**

Materion is the name for Brush Engineered Materials, including former Williams Advanced Materials, Barr Associates, Brush Wellman & Brush Ceramics. Our products include precision thin film filters and optical coatings, thin film hybrid circuits, and flexible interconnects as well as beryllium- and non-beryllium-based metals and metal matrix composites for aerospace, defense, and security applications. Contact: Mike Zasowski, Director of Marketing, michael.zasowski@materion.com; Rob Michel, Manager, Market Development, robert.michel@materion.com.

## Max Levy Autograph, Inc.

#1239

SPIE Corporate Member

2710 Commerce Way, Philadelphia, PA, 19154  
+1 215 842 3675; fax +1 215 842 3637  
sales@maxlevy.com; www.maxlevy.com

## MBDA

#1230

Six Hills Way, Stevenage Herts, United Kingdom, SG1 2DA  
+44 1438 754477; fax +44 1438 755198  
precision.solutions@mbda-systems.com; www.mbdaps.com  
MBDA offers a wide range of defense and aerospace specialized engineering capabilities on a commercial basis. Test & Analytical, Sensor & Imaging, Force Protection and Manufacturing Solutions include Electro Optical Design & Manufacture, DVE/LVL Systems, LADAR, IR Interferometry, HWIL RF & IR Countermeasures, Synthetic Environments, C-IED Technologies and Systems, High Power RF Test Sources, Radiation Effects, Human Factors and RF Innovations. Contact: Peter Gordge, Business Manager, peter.gordge@mbda-systems.com; Simon Pearson, Business Development Manager, simon.pearson@mbda-systems.com.

## McQ Inc.

#731

1551 Forbes St, Fredericksburg, VA, 22405  
+1 540 373 2374; fax +1 540 371 1358  
info@mcqinc.com; www.Mcqinc.com

**Featured Product: OmniSense, iScout and OmniWatch: sensors systems which detect and classify activity in remote areas.**

McQ is recognized as the high technology leader in remote surveillance, security and environmental monitoring. Sensors are wireless, networked, have low power consumption and are easily deployed. OmniSense, iScout and OmniWatch are our signature products used in perimeter surveillance detecting the activity with four transducers: seismic, acoustic, magnetic and passive infrared. Imaging capturing capabilities are also coupled with the systems. Contact: Karen Lindsey, Director of Marketing, klindsey@mcqinc.com; Monica Dirom, Business Development, mdirom@mcqinc.com.

## Meadowlark Optics

#116

PO Box 1000, Frederick, CO, 80530  
+1 303 833 4333; fax +1 303 833 4335  
sales@meadowlark.com; www.meadowlark.com

**Featured Product: SWIFT Liquid Crystal devices - Analog nematic liquid crystal devices with switching times <150 usec.**

A recognized authority in polarization and polarization manipulation devices such as waveplates, liquid crystal variable retarders, polarizers, tunable optical filters, polarimeters and spatial light modulators. Also offering custom design, fabrication, and assembly. Contact: Chris Toomey, Sales Engineer, ctoomey@meadowlark.com; William Barbarow, Sales Engineer, wbarbarow@meadowlark.com.

## MegaWatt Lasers, Inc.

#3906

SPIE Corporate Member

PO Box 24190, Hilton Head Island, SC, 29925-4190  
+1 843 342 7221; fax +1 843 342 7223  
mwl@mwlasers.com; www.megawattlasers.com

**Featured Product: Lasers and Other Light Sources, Laser Accessories, Laser Systems.**

MWL manufactures eyesafe microlasers, pump chambers, and application specific lasers, including the ER-100 eyesafe Er:Glass microlaser; packaged in a T0-3 housing, this laser produces 2ns pulses pulsed with a peak power of 50 kW making it ideal for remote sensing applications. Our high efficiency diffuse reflector pump chambers are ideal for pulsed and CW solid state lasers. We also manufacture application specific solid state lasers for medical, industrial, and defense applications. Contact: Bob McAllister, Director of Sales and Marketing, bob.mcallister@megawattlasers.com; Scott Hamlin, President, scott.hamlin@megawattlasers.com.

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**Meller Optics, Inc.****#1224**120 Corliss St, Providence, RI, 02904  
+1 401 331 3717; fax +1 401 331 0519

sales@melleroptics.com; www.melleroptics.com

Meller Optics has been providing high quality optics to defense, medical, laser and industrial markets for over 50 years. Specializing in grinding and polishing of hard, durable materials. Meller has developed high-speed, low-cost finishing processes for Sapphire, Ruby, Laser Glasses, Fused Silica, Zinc Selenide, Germanium, Silicon, Fluorides and Ceramics. Configurations include windows, substrates, lenses, domes and prisms. Meller Optics is an ISO9001:2008 certified company. Contact: Craig D. Schweriner, Sales Mgr., craig@melleroptics.com; Steve Lydon, Sales, Steve@melleroptics.com.

**Metrigraphics, LLC****#3104**50 Concord St, Wilmington, MA, 01887  
+1 978 658 6100; fax +1 978 657 7765

metsales@metrigraphicsllc.com; www.metrigraphicsllc.com

Metrigraphics, LLC has been serving DoD organizations for over 45 years. As a major supplier of high-resolution electroformed components, micro-flex circuits and coils and precision optical components, we have been providing micro technology solutions for a wide variety of motion control, analytical instrumentation and optical applications. Our processes are ideal for building precision optical slits, reticles, test targets and RF coils. We work with a wide variety of substrates. Contact: Fred Pitman, Marketing & Sales Director, fpitman@metrigraphicsllc.com; Diane Black, Senior Account Manager, dblack@metrigraphicsllc.com.

**MICOS USA**

SPIE Corporate Member

**#737**15375 Barranca Pkwy Ste E-106, Irvine, CA, 92618  
+1 949 480 0538; fax +1 949 480 0538

mschneider@micosusa.com; www.micosusa.com

**Micro Laser Systems, Inc.****#1104**

SPIE Corporate Member

12841 Western Ave Ste H, Garden Grove, CA, 92841  
+1 714 898 6001; fax +1 714 897 0979

sales@microlaser.com; www.microlaser.com

**Featured Product: FC40 Large Fiber Collimator.**

Manufacture Free Space and Fiber Coupled diffraction limited lasers and Optical Assembly Systems from 370nm to 2000nm. Lasers have very high stability, narrow line widths, low noise and are combined with our focusing optics, beam expanders, fibers and other optical elements to solve complex laser/optical problems for OEM users. This ensures all elements work well together. Custom systems are routinely manufactured for OEM users. Contact: Norma Adachi, Marketing Dir., norma@microlaser.com; Yoshi Adachi, President, yoshi@microlaser.com.

**Micro Photon Devices****#3414**Via Stradivari 4, Bolzano, Italy, 39100  
+39 0471 051212; fax +39 0471 501524nick.bertone@optoelements.com;  
www.microphotondevices.com

MPDs single-photon detection modules have ultra-fast timing resolution, high photon detection efficiency, low power consumption, small size and are extremely robust and reliable. The company benefits of the efforts and the expertise of a research group at Politecnico di Milano, lead by Professor Sergio Cova. Contact: Nick Bertone, sales@optoelements.com; Natalie Raymond, Marketing, Natalie.Raymond@optoelements.com.

**MicroE Systems****#3000**125 Middlesex Turnpike, Bedford, MA, 01730  
+1 781 266 5700; fax +1 781 266 5112

info@microesys.com; www.microesys.com

**Featured Product: MicroE Systems' new Mercury II 6000 encoder has the smallest sensor capable of 1.2nm resolution!**

MicroE Systems manufactures miniature, high-performance encoders for motion control feedback. Named Mercury II™, these encoders enable dramatic size, weight and cost reductions of motion stages while increasing resolution and positioning performance. Resolutions range from 5 microns to 1.2 nanometers. Vacuum models operate at up to 1E-08 torr. PCB-mount versions with Z-height of only 5.6mm enable incredibly compact motion systems with resolutions to 80nm. Contact: Mitchell Jones, Market Development Manager, mjones@gsg.com; Paul Costello, Manager, OEM Sales, pcostello@gsg.com.

**Microflown AVISA****#3801**Tivolilaan 205, Arnhem, Netherlands, 6824 BV  
+1 31 88 0010 800; fax +1 31 880 010 810

info@microflown.com; http://www.microflown.com/

**Featured Product: Acoustic Vector Sensor localising gunshots, rockets, artillery, mortars, vehicles, aircraft & UAVs**

Microflown AVISA develops Acoustic Vector Sensors (AVS) for 3D situational awareness. Microflown's AVS are passive sensors based on new technology, which can detect and localise multi-events from multiple platforms, merging and exceeding the performance of existing acoustic detection systems. The unique and patented source (target) locating sensors are used to enhance situational awareness at borderlines, high security perimeters and on the battlefield. Contact: John Bremner, Business Development Manager, bremner@microflown.com; Jelmer Wind, Senior Research Scientist, wind@microflown.com.

**Micromechatronics, Inc.****#1523**200 Innovation Blvd Ste 155, State College, PA, 16803  
+1 814 861 5688; fax +1 814 861 1418

contact@mmech.com; www.mmech.com

**MicroOLED****#1311**BHT bat 52 BP 50, 7 parvis Louis Neel, Grenoble Cedex,  
France, 38040

sales@usa.photonis.com; www.microoled.net

**Featured Product: OLED displays with high resolution and low power consumption, ideal for tactical applications.**

MicroOLED manufactures organic light-emitting diode displays for use in mobile and near-to-eye applications. The MICROOLED devices can provide a resolution that is up to four times higher than that of the competitors, with a level of energy consumption four times less, at a price compatible with consumer applications. Contact: Lee Nowell, Director of Sales, l.nowell@photonis.com.

**MIDAC Corp.****#1108**130 McCormick Ave #111, Costa Mesa, CA, 92651  
+1 714 546 4322; fax +1 714 546 4311

info@midac.com; www.midac.com

# Exhibitor Directory

## PROMOTIONAL PARTNER

### Military & Aerospace Electronics

#304

98 Spit Brook Rd, Nashua, NH, 03062  
+1 603 891 0123  
www.milaero.com

Military & Aerospace Electronics is the leading media resource serving program and project managers, engineering managers, and engineers involved in electronic and electro-optic design for military, space, and aviation applications. It delivers news, analysis, and trends in the use of mil-spec, rugged, and commercial components, subsystems, and systems. Contact: Ernesto Burden, Publisher, ErnestoB@pennwell.com.

### Mindrum Precision, Inc.

#1009

SPIE Corporate Member

10000 Fourth St, Rancho Cucamonga, CA, 91730  
+1 909 989 1728; fax +1 909 987 3709  
sales@mindrum.com; www.mindrum.com

**Featured Product: Miniaturized solenoid valve (Micro Valve) used in mass spectrometers under license from NASA Goddard.**

Custom manufacturer of precision components. We specialize in low-volume, high-precision, complex parts on short timelines. 5-axis CNC machining and polishing in engineered materials including but not limited to glass, fused silica, quartz, sapphire and ceramics as well as conventional materials including but not limited to aluminum, stainless steel, titanium, Inconel and copper. Contact: Adam Pohl, Business Development Manager, adam@mindrum.com; Todd Van Son, Customer Support and Sales Manager, todd@mindrum.com.

### Moog QuickSet

#316

3650 Woodhead Dr, Northbrook, IL, 60062-1895  
+1 847 498 0700; fax +1 847 498 1895  
www.moog.com

Moog QuickSet (Booth 316) is the global leader in providing ruggedized components and integrated systems for the sensor and surveillance industry around the world. Our products are manufactured to endure and withstand the harshest environments, providing amazing durability in coastal spray, blowing desert sand and arctic conditions. Stop by our booth (#316) for a preview of our newest sensing products. www.quickset.com. Contact: Moog QuickSet Sales, Sales & Marketing, sales@quickset.com; Trish Logue, Marketing Manager, plogue@moog.com.

### Moore Nanotechnology Systems LLC

#326

230 Old Homestead Way, Swanzey, NH, 03446  
+1 603 352 3030; fax +1 603 352 3363  
cassin@nanotechsys.com; 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, perra@nanotechsys.com.

### Morpho Detection

#204

205 Lowell Ave, Wilmington, MA, 01887  
+1 978 909 1200  
sales.mduk@morphodetection.com; www.morphodetection.com

### MP Technologies

#1527

1801 Maple Ave, Evanston, PA, 60201  
847 491 7208; fax 847 467 1817  
razeghi@eecs.northwestern.edu

**Featured Product: Type-II based single color, two-color, and large format IR-FPAs; high power Quantum Cascade lasers.**

MP Technologies is a small R&D company spun-off from the Center for Quantum Devices at Northwestern University to pursue developing advanced compound semiconductor engineering and optoelectronic device components for integration into DoD platforms. MP Technologies has a full semiconductor processing and device testing capability and a comprehensive intellectual property portfolio specializing in the development of Type-II Superlattice FPAs, Quantum Cascade Lasers, and Solar-Blind detectors. Contact: Manijeh Razeghi, President, razeghi@eecs.northwestern.edu.

### MRC a PPGI company

#322

SPIE Corporate Member

6455 Parkland Dr, Sarasota, FL, 34243  
+1 947 753 8707; fax +1 947 751 4249  
sales@mrcoptics.com; www.ppgioptics.com

Manufacturer & Designer of precision metal & infrared optical components, systems & sub-assemblies. Full inhouse aspheric diamond machining, plating, polishing and testing capability. Materials include all non-ferrous metals, crystals, beryllium & composites. Products include polygons, aspheric components, off-axis parabolics, large flat mirrors & multi-mirror systems. Contact: Jeffrey Brunner, Director of Sales & New Business Development, jbrunner@ppgioptics.com; George Murray, West Coast Sales Manager, gmurray@ppgioptics.com.

### Multi IR Optoelectronics Co., Ltd.

#1323

SPIE Corporate Member

No 6 Xiyuansi Rd, Xihu T&E Zone, Hangzhou, Zhejiang, China, 310030  
+86 571 89905370; fax +86 571 89905376  
service@mirhz.com; www.mirhz.com

**Featured Product: IR bandpass filter, IR long pass filter, AR coating, IR lens, window, IR filter wheel, beam splitter, etc.**

Multi IR Optoelectronics Co., Ltd is professional manufacturer of IR optical thin film coating. We keen on researching, designing & manufacturing high quality IR filters & founded by a group of professionals over 20 years in optical fields. Our products includes IR Bandpass Filter, IR (AR) lens, window, IR beamsplitter, filter wheel, etc, through prototyping to production(near IR~ far IR). Applications: IR Thermal Imaging, Sensing, detectors, etc. We can make various IR filters based on client's order request.

### Multisorb Technologies

#1401

SPIE Corporate Member

325 Harlem Rd, Buffalo, NY, 14224  
+1 716 824 8900; fax +1 716 824 4128  
info@multisorb.com; www.multisorb.com

**Featured Product: Desiccant loaded polymer for dustless optical applications.**

Multisorb Technologies, the worldwide leader in active packaging solutions, has been an innovator in sorbent technology for 50 years. Our technologies protect countless others from the damaging effects of moisture, oxygen, odors, and other volatiles to improve product stability and increase shelf life. Contact: Dan Casacci, Business Development Leader, Electronics, dcasacci@multisorb.com; Ken Credle, Business Development Leader, Electronics, kcredle@multisorb.com.



# IMAGING TECHNOLOGY THAT'S BEYOND **IMAGINING.**

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## THIS IS HOW | SANTA BARBARA FOCALPLANE

Lockheed Martin Santa Barbara Focalplane *is* infrared imaging, delivering the most complete family of mid wave infrared focal plane arrays. With maximum sensitivity, high frame rates, extreme megapixel resolution, and miniature packages. Bringing mission-critical information into focus is all a question of how. And it is the how that Lockheed Martin delivers.

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LOCKHEED MARTIN 



# Exhibitor Directory

## Naked Optics Corp.

SPIE Corporate Member

1090 Delacroix Circle, Nokomis, FL, 34275  
+1 908 685 0352; fax +1 908 325 0250  
sales@nakedoptics.com; www.nakedoptics.com

**Featured Product: IR Lenses, Diamond-Turning, IR material blanks.**

Supplier of IR optics and diamond-turned components with aspheric, diffractive & free-form surfaces in IR materials, plastics and metals; optical design services; Polished & coated windows and substrates from prototype to high-volume production; IR and glass blanks including ZnSe, Si, Ge, BaF<sub>2</sub>, CaF<sub>2</sub> and optical glasses; Optical glass strip, molded and CNC-machined blanks of all optical materials. Contact: Buzz Nesti, sales@nakedoptics.com; Glen Dunn, glen@nakedoptics.com.

#431

## National Aperture, Inc.

SPIE Corporate Member

16 Northwestern Dr, Salem, NH, 03079  
+1 603 893 7393; fax +1 603 893 7857  
wgrenier@naimotion.com; www.nationalaperture.com

#1219

## National Defense Industrial Association #403

2111 Wilson Blvd Ste 400, Arlington, VA, 22201  
+1 703 247 2571; fax +1 703 527 6945  
mkibler@ndia.org; www.ndia.org

NDIA is America's leading non-profit Defense Association providing a legal and ethical forum for networking and knowledge exchange between the DoD, Department of Homeland Security, all branches of the US Military, and industry. NDIA has local chapters, 32 divisions for corporate involvement, and numerous conferences and trade shows. Individual and Corporate memberships are available. US government and military are welcome to join free of charge. NDIA has roots dating back to 1919. Contact: Erica Utegaard, Corporate Member Sales Manager, utegaard@ndia.org.

## Nallatech

759 Flynn Rd, Camarillo, CA, 93012  
+1 805 383 3459; fax +1 805 482 8470  
contact@nallatech.com; www.nallatech.com

Nallatech, a subsidiary of Interconnect Systems, Inc. (www.isipkg.com), is a leading supplier of accelerated-computing solutions. Nallatech designs and manufactures FPGA products for high performance computing applications and rugged embedded computing platforms. Customers benefit from lower costs, reduction in size, weight and power and improved performance. For further information, visit www.nallatech.com, or call (805) 383-8997 (North America) or +44 1236 789 567 (Europe). Contact: Dennis Brondi, Marketing Manager, dennis.brondi@isipkg.com.

#3500

## National Reconnaissance Office

#333

14675 Lee Rd, Chantilly, VA, 20151-1715  
+1 703 808 2769; fax +1 703 808 2646  
dii@nro.mil; http://dii.westfields.net

**Featured Product: The National Reconnaissance Office's Director's Innovation Initiative Program.**

R&D Funding - The National Reconnaissance Office's Director's Innovation Initiative invests in advance technologies, foster innovation, and pushes the boundaries of technology to dramatically improve their remote sensing capabilities. It's an opportunity for developers not traditionally associated with the NRO to participate in building the NRO of the future. Contact: Gil Herlich, Program Manager, dii@nro.mil; Kevin Donaleski, Program Support, dii@nro.mil.

## Nanomotion Inc.

1 Comac Loop Ste 1482, Ronkonkoma, NY, 11779  
+1 800 821 6266; fax +1 631 585 1947  
nanous@nanomotion.com; www.nanomotion.com

**Featured Product: NUC Shutters / Apertures for IR sensors, providing light weight and low power consumption.**

Nanomotion is the leader in piezo based motors and modules for shutter & aperture control, auto focus and zoom, and optical image stabilization. Our motors / modules are supported by our ASIC or MCU for superior closed loop performance. Products are flight qualified and have passed thermal and vibration testing to meet the most demanding applications. Contact: Alan Feinstein, President, afeinstein@nanomotion.com; Mike Bryant, Regional Manager, mbryant@nanomotion.com.

#3300

## NAVAIR IBST

#3105

48150 Shaw Rd Unit 5, Patuxent River, MD, 20685  
+1 301 342 6008  
ibst@navy.mil; www.navair.navy.mil

## Navitar, Inc.

#839

200 Commerce Dr, Rochester, NY, 14623  
+1 585 359 4000; fax +1 585 359 4999  
info@navitar.com; www.navitar.com

## Nasatka Security

#739

7702-B Old Alexandria Ferry Rd, Clinton, MD, 20735  
+1 301 868 0300; fax +1 301 868 0524  
jwww.nbistop.com

**Featured Product: OptaSense provides an early warning of unauthorized third party interference activity.**

Prior to the events of 9-11, Nasatka Security, Inc. had been a leader in the development, production, and installation of perimeter-security-vehicle-access control barrier systems. Nasatka has continued to challenge itself in product innovation to provide the highest degree of safety and security in vehicle-access-control perimeter security for government agencies, military installations, top security offices, law enforcement, and commercial industries domestically and worldwide. Contact: John Scolaro, CEO, john.scolaro@nasatka.com; Chris Phillips, Senior Director of Advanced Projects, chris.phillips@nasatka.com.

## New England Optical Systems - NEOS

#1518

SPIE Corporate Member

237 Cedar hill St, Marlborough, MA, 01752-3004  
+1 508 460 0019; fax +1 508 460 0098  
sales@neos-inc.com; www.neos-inc.com

**Featured Product: Infrared Optical Systems: Continuous Zoom, Multi FOV, Multi-Spectral, 3rd Gen Dualband, MWIR, LWIR.**

New England Optical Systems (NEOS) is engineering and manufacturing high performance optical systems from the infrared to visible wavebands. Capable of manufacturing complex systems along with high volume production. Products can be found in applications such as ISR, tracking, navigation, and situational awareness. Platforms include LAV, UAV, aerospace, soldier systems and commercial. Also supports IR Scene Projection, astronomical instrumentation, and optical test stations with automation. Contact: Peter Kornik, Director of Business Development, pkornik@neos-inc.com; Todd Stolberg, COO, tstolberg@neos-inc.com.



## Free Popcorn

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Popcorn carts will be open Tuesday and Wednesday from 11:00 am to 3:00 pm; Thursday from 11:00 am to 2:00 pm.

**New Focus, a Newport Corporation Brand #922**

3635 Peterson Way, Santa Clara, CA, 95054  
+1 408 980 4300; fax +1 408 980 5537  
sales@newfocus.com; www.newfocus.com

**New Imaging Technologies #1137**

14 rue Charles Fourier, Evry, France, 91000  
+33 1 60 76 46 48  
info@new-imaging-technologies.com;  
www.new-imaging-technologies.com

**Featured Product: Native Wide Dynamic Range™ CMOS Sensors: 120dB in a single shot.**

NIT offers a complete range of standard, customized and full custom CMOS sensors, for a variety of applications, such as machine vision, automotive transportation, biometrics, medical, security and surveillance, where performance, cost, quality and reliability are of premium choice. Contact: Nicolas Baroan, Sales & Marketing Engineer, nicolas.baroan@new-imaging-technologies.com.

**New Infrared Technologies #3305**

Calle Vidrieros 30 Nave 2, Boadilla del Monte Madrid, Spain, 28660  
+34 91 632 4363; fax +34 91 576 4939  
info@niteurope.com; www.niteurope.com

**Featured Product: Uncooled PbSe MWIR high-speed sensors: imaging FPA, linear arrays and single element.**

New Infrared Technologies manufactures PbSe imaging FPA and high speed uncooled IR systems. The MATRIX 1024 SERIES, based on the only PbSe imaging FPA in the market, offers uncooled performance, detection in the MWIR band, high speed (> 1,600 fps) at an affordable price. It spans from the FPA to the CAMERA, including OEM modules. Other products are the LUXELL SERIES (linear arrays) and the LEPTON SERIES (single element detectors with different geometries or custom designed). Contact: Rodrigo Linares, Sales and Marketing Manager, rlinaresh@niteurope.com; Arturo Baldasano, Managing Director, abaldasano@niteurope.com.

**New Scale Technologies, Inc. #130**

**SPIE** Corporate Member

121 Victor Heights Pkwy, Victor, NY, 14564  
+1 585 924 4450; fax +1 585 924 4468  
sales@newscaletech.com; www.newscaletech.com

We create disruptively small, precise, low-power motion systems. Our closed-loop M3 micro-mechatronics modules, piezoelectric SQUIGGLE motors & miniature TRACKER position sensors enable customers to create smaller, more feature-rich products. Applications: focus, zoom & image stabilization for phone cameras, board cameras, machine vision and biometric systems, optical and RF tuning, UAV & missile flight control, laser tuning & positioning, & medical devices. Contact us at sales@newscaletech.com. Contact: Ralph Weber, Product Manager, rweber@newscaletech.com; Bobbi Merenda, Sales & Marketing Coordinator, bmerenda@newscaletech.com.

**Newcon Optik #1411**

105 Sparks Ave, Toronto, ON, Canada, M2H 2S5  
+1 416 663 6963 ; fax +1 416 663 9065  
newconsales@newcon-optik.com; www.newcon-optik.com

**Newport Corp. #922**

**SPIE** Corporate Member

1791 Deere Ave, Irvine, CA, 92606  
+1 949 863 3144; fax +1 949 253 1680  
sales@newport.com; www.newport.com

Newport has been enabling high-precision aerospace and defense technology development and production for over 30 years. We're a global leader in precision motion systems, vibration control, optics, lasers, and photonics instrumentation, providing the foundation of many development, test, assembly and calibration systems that ensure the accuracy and reliability of our defense systems worldwide. Contact: Beda Espinoza, Sr. Product Manager, Motion, beda.espinoza@newport.com.

**Nextreme Thermal Solutions, Inc. #1233**

3908 Patriot Dr Ste 140, Durham, NC, 27703-8031  
+1 919 597 7300; fax +1 919 597 7301  
info@nextreme.com; www.nextreme.com

Nextreme Thermal Solutions offers electronics cooling and energy harvesting solutions for telecommunications, semiconductor, consumer, medical, aerospace and government markets. The company uses microscale thermoelectric technology and high-volume semiconductor manufacturing processes to address the growing needs for advanced thermal management and clean-energy solutions world-wide. Visit www.nextreme.com. Contact: Bill Charuk, Director of Sales, bcharuk@nextreme.com.

**Ninbgo Sunny Infrared Technologies Co, Ltd. #1403**

66-68 Shunyu Rd, Yuyao Zhejiang, China, 315400  
+86 574 62530985; fax +86 574 62530885  
sunnyIR@sunnyoptical.com; www.sunnyoptical.com

**Featured Product: thermal imaging lens.**

Ningbo Sunny Infrared Technologies Co., Ltd, a subsidiary of Sunny Optical Technology (Group) Co., Ltd, specializes in the R&D of IR materials, and the design, process and sale of thermal imaging lenses. With excellent experts of infrared materials and decades of experience of lens design and process, the company possesses complete technology of melting, polishing, turning and high precision molding of chalcogenide glass, and the design and process of high performance thermal imaging lenses. Contact: Erin Meng, Sales Manager, sunnyIR@sunnyoptical.com.

**Nivo Technology #1237**

1165 Mayfield Manor Dr, Alpharetta, GA, 30009  
+1 678 230 6066; fax +1 801 846 3218  
jwang@nivotechnology.com; www.nivotechnology.com

**Featured Product: IR optical materials: Germanium, Silicon, ZnSe & ZnS. IR Optical components: windows, lens, blanks.**

Nivo Technology specializes in designing, manufacturing IR optical components and blanks: windows, spherical Lens, filters, & prisms, mirror, etc. Materials include Germanium, Silicon, ZnSe & ZnS, Sapphire, etc. In-house diamond machining, polishing, antireflective and diamond-like coating capability. From large production to smaller R&D volumes. We offer a full line of optical coating materials for thin film coating: from UV to IR. We also supply precision optical glass & plastic components. Contact: John Wang, VP Global Sales, jwang@nivotechnology.com.

# Exhibitor Directory

## NOIR LaserShield

SPIE Corporate Member

Laser Shields, 6155 Pontiac Trl, South Lyon, MI, 48178  
+1 734 769 5565; fax +1 734 769 1708  
noirsales@noirlaser.com; www.noirlaser.com

**Featured Product: Offering a new series of high-visibility, multi-line absorbing filters for visible and IR sources.**

LaserShields provide industry-defining protection and visibility with over 100+ filters and a frame to fit any face. LaserShields afford high Optical Densities without sacrificing visibility, all while delivering the highest damage threshold ratings possible for femtosecond and high energy pulses. Made in the USA and are CE-Certified for the world of laser applications, LaserShields are the point where safety and comfort converge. Contact: David Bothner, Director of Marketing, david.bothner@lasershields.com.

#1206

## Northrop Grumman Cutting Edge Optronics

SPIE Corporate Member

20 Point W Blvd, St Charles, MO, 63301  
+1 636 916 4900; fax +1 636 916 4994  
st-ceolaser-info@ngc.com;  
www.as.northropgrumman.com/ceolaser

Northrop Grumman Cutting Edge Optronics is a leading supplier of advanced laser diode and DPSS laser technology. CEO specializes in developing & manufacturing high performance laser diode arrays, laser gain modules, control electronics and complete laser systems for military, aerospace and commercial applications. Applications include Laser Pumping, LIDAR, Ranging/Designation and Directed Energy. Discover why CEO diode arrays and DPSS lasers are used in many of the world's most advanced systems. Contact: Wade Collins, Sales Manager Military & Aerospace Lasers, wade.f.collins@ngc.com.

#1223

## Nova Sensors

SPIE Corporate Member

320 Alisal Rd Ste 104, Solvang, CA, 93463  
+1 805 245 9979  
tony@novasensors.com; www.novasensors.com

**Featured Product: Nova is currently offering a 640x512 SWIR (InGaAs) camera along with a 640x512 MWIR (InSb) for sale.**

Incorporating low power and compact camera electronics, Nova Sensors® offers cameras covering a wide range of applications including Hostile Fire Identification (HFI), missile launch detection/classification, and dismount identification tracking. The flexible open architecture of Nova's Versatile Infrared Electronics (NVIE) allows inexpensive adaptation of components to virtually any focal plane array. End users get maximum customization options with minimal non-recurring engineering costs. Contact: Tony Vengel, Vice President of Business Development, tony@novasensors.com; Mark Massie, President, mark@novasensors.com.

#1210

## Novotech, Inc.

SPIE Corporate Member

916 Main St, Acton, MA, 01720  
+1 978 929 9458; fax +1 978 929 9459  
contact@novotech.net; www.novotech.net

**Featured Product: Precitech Nanoform 250 Ultra and Optimum 2400 for Diamond Turning Aspheres & Diffractives.**

NOVOTECH, INC. is an ISO 9001-2008 ITAR Registered Infrared Manufacturer of Germanium, Silicon, ZnSe & ZnS Materials. These include: Generated Lens Blanks, Components, Finished Lens Elements, Optics, Dewars and Mid to Longwave Windows & substrates. NOVOTECH has the ability to manufacture large production orders to smaller R&D volumes in record time. Contact: Michael Hulen, President, mhulen@novotech.net; Peter Schwarzer, Account Manager, peters@novotech.net.

#840

## nPoint, Inc.

SPIE Corporate Member

3030 Laura Ln Ste 100, Middleton, WI, 53562  
+1 608 824 1770; fax +1 608 824 1774  
info@npoint.com; www.npoint.com

**Featured Product: C400 controller-32-bit DSP, multiple advanced control profiles, and an easily navigated GUI.**

nPoint, Inc. manufactures ultra-precision motion and control devices for nano-scale research and manufacturing. Our products include a series of nanopositioning systems that consist of piezo stages and control electronics. The positioning products enable rapid, precise, and repeatable motion and are used in a wide range of applications including aerospace, semiconductor industries and life sciences. Contact: Katerina Moloni, VP of Sales and Product Development, katerina.moloni@npoint.com; Sharath Nair, Sales Account Manager, sharath@npoint.com.

#414

## Nu-Cast, Inc.

29 Grenier Field Rd, Londonderry, NH, 03053  
+1 603 432 1600; fax +1 603 432 0724  
dvz@nucast.net; www.nu-cast.com

**Featured Product: Precision Aluminum Investment Castings.**

Nu-Cast is an American Small Business established in 1985, manufacturing precision aluminum investment castings from the lost wax process. We are AS 9100 Certified, and produce castings supporting military, commercial and NASA programs. Products include infrared/optical and laser housings, electronic and avionics chassis and aircraft displays. Production castings are made from hard tooling, and pre-production and R&D castings can be made from quickcast SLA's generated from CAD file data. Contact: Doug Veysey, Sales & Marketing Manager, dvz@nucast.net; John Bowkett, Vice President, jtb@nucast.net.

#303

## Nuferm

SPIE Corporate Member

7 Airport Park Rd, East Granby, CT, 06026  
+1 860 408 5000  
info@nuferm.com; www.nuferm.com

Nuferm is a leading U.S. manufacturer of specialty optical fibers, precision wound optical fiber coils, fiber lasers and amplifiers. Our integrated team has the experience, resources, and facilities required to design, manufacture, test and qualify highly-engineered optical fibers and fiber-based products for diverse applications and industries. Contact: Scott Christensen, Director, Government, Military & Aerospace Sales, schristensen@nuferm.com; Fernando Martins, Customer Service Manager, fmartins@nuferm.com.

#419

### Symposium-Wide Plenary Presentation

#### Open to All Attendees

Exhibition visitors, exhibitors, and technical conference attendees



#### Dr. Regina E. Dugan

Director, Defense Advanced Research Projects Agency (DARPA)

Tuesday 26 April · 8:30 to 9:30 am  
Crystal H, See page 16 for details



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Zakya H. Kafafi, Editor

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# Exhibitor Directory

## NuPhoton Technologies, Inc.

#108

41610 Corning Pl, Murrieta, CA, 92562  
+1 951 696 8366; fax +1 951 696 8394  
info@nuphoton.com; www.nuphoton.com

**Featured Product: NP2000 compact laser, 1064nm/1550nm. 100mW avg. power, 4kW peak power. Ideal for LIDAR equipment.**

Nuphoton manufactures fiber lasers, fiber amplifiers (EDFAs and YDFAs), broadband sources and Raman amplifier modules for LIDAR/LADAR, telecom, defense & medical markets. Specializes in compact and reliable fiber lasers in the 1550nm, 1064nm, 2000nm and 532nm wavelengths. Founded in 1996, Nuphoton is an ISO9001 and AS9100 certified company serving aerospace, defense, industrial, medical, test & measurement and R&D markets. Also supports continuous wave and pulsed custom laser development. Contact: Norm Nelson, VP, Business Development, norm@nuphoton.com; Dr. Ram Pillai, President & CEO, ram@nuphoton.com.

## Ocean Optics, Inc.

#639

**SPIE** Corporate Member

830 Douglas Ave, Dunedin, FL, 34698-5761  
+1 727 733 2447; fax +1 727 733 3962  
info@oceanoptics.com; www.oceanoptics.com

**Featured Product: Miniature, modular spectroscopy including LIBS, Raman, Deep UV Maya2000, NIRQuest Near Infrared.**

The inventors of the world's first miniature spectrometer, Ocean Optics provides a vast range of equipment and solutions for optical oxygen sensing. Contact: Sales, info@oceanoptics.com.

## Ocean Thin Films

#641

**SPIE** Corporate Member

8060 A Bryan Dairy Rd, Largo, FL, 33777  
+1 727 545 0741; fax +1 727 544 2241  
info@oceanthinfilms.com; www.oceanthinfilms.com

Ocean Thin Films (OTF) produces precision, durable and reliable optical components and sub-assemblies in our ITAR compliant facilities. From high-quality, high-volume manufacturing of products ranging from reticle patterning to full assembly of optical systems, OTF provides custom solutions for defense, security, and aerospace applications. For additional information, contact our Application Engineers at info@oceanthinfilms.com.



WIFI SPONSOR

## OFS Specialty Photonics Division

#3212

**SPIE** Corporate Member

55 Darling Dr, Avon, CT, 06001-4273  
+1 860 678 0371; fax +1 860 678 8818  
info@specialtyphotonics.com; www.specialtyphotonics.com

OFS has a long history of serving the defense market with custom and standard fibers, cables and assemblies frequently deployed in harsh environments. Our products perform with high reliability in data/communication systems used in space, commercial and military aircraft, ground and undersea. Fiber Bragg gratings and specialty fibers in reduced diameters or in polarization maintaining design enable a wide range of sensors. Contact: Cathy Ciardiello, GAD Market Manager, crc7@ofsoptics.com; John Posey, Sales Engineer, jposey@ofsoptics.com.

## Ohara Corp.

#240

**SPIE** Corporate Member

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

**Featured Product: Increased selection of optical materials including an extensive range of IR and UV offerings.**

Ohara is a one-stop shop for all of your optical material requirements. In addition to the more than 150 glass types available, Ohara offers a complete range of UV and IR materials including Fused Silica, CaF<sub>2</sub>, Germanium, Silica, MgF<sub>2</sub>, BaF<sub>2</sub>, Sapphire, ZnS, ZnSe and many other materials. Polished Substrates produced in a cleanroom environment offer industry leading quality and precision surfaces. Index Measurement Services are also available. Contact Chris Ghio, Director of Sales, chrisghio@oharacorp.com.

## OJSC Germanium

#3002

Transport NY Proezd 1 Bldg 107, Krasnoyarsk, Russia, 660027  
+7 391 259 3494; fax +7 391 264 6696  
germanium@krasmail.ru; krasgermanium.com

**Featured Product: GeO<sub>2</sub>, GeCl<sub>4</sub>; GPZ; metallic germanium; germanium ingots; blanks for optical components.**

OJSC Germanium was established in 1991. The technology applied allows to process raw materials with germanium content from 2%. Products are assessed according to ASTM international standards and Russian standards. The quality performance is controlled on every intermediate phase of manufacturing work that guarantees high quality of the products and strict conformance to standards and specification requirements. Contact: Jane, Engineer of Marketing Department, germanium@krasmail.ru.

## O-m6 Technologies Inc.

#3617

14163 Rd 117 Ste 90, Mirabel, QC, Canada, J7J 1M3  
+1 450 979 2275; fax +1 450 979 4110  
sales@om6.com; www.om6.com

**Featured Product: Ruggedized Fiber Optic Cable Assemblies High Power Fiber Cables Stainless Steel Jacket Cables.**

O-m6 Technologies manufactures Fiber Optic Cable Assemblies. Specialty fiber cable, including PM, Puremode, Non-standard fibers -Specialty jacketing cables, such as Loose tube, Soft jacket, Metallized jacket -Custom device termination including Connector and Ferrule installation -Hi-tech assemblies such as Si-V groove array and Fiber polishing -Custom Cables and harness -Patchcords -Pigtails -Multi-fiber cables. O-m6 Technologies is a responsive Customer-driven company. Contact: Jean-Yves couturier, jy.couturier@om6.com; Eric Maisonneuve, e.maisonneuve@om6.com.

## OmniPulse Technology

#113

**SPIE** Corporate Member

6355 Nancy Ridge Dr, San Diego, CA, 92121  
+1 858 452 7700  
www.omnipulsetechnology.com

OmniPulse Technology (formerly OptiSwitch) specializes in ultra compact, precision current sources for driving pulsed laser diodes in a variety of applications including range finding, target designation, LIDAR, seeding fiber lasers, and pumping solid state lasers. Contact: Rose Southall, Sales Manager, rose@omnipulsetechnology.com.

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**Onefive GmbH**

#736

SPIE Corporate Member

In Böden 139, Zurich, Switzerland, 8046  
+41 43 538 36 57; fax +41 43 538 36 86  
contact@onefive.com; www.onefive.com

**Featured Product: Katana: Versatile ps laser with >10 µJ pulse energy at truly continuously variable repetition rates.**

Onefive is a leading global supplier of industry-proven, low-noise ultrafast as well as narrow- linewidth single frequency laser products for OEM and R&D. The compact air-cooled lasers are as friendly to operate as laser pointer with guaranteed 24/7 operation. The portfolio contains picosecond and femtosecond lasers and offers wider choice in laser parameters: UV-IR wavelength range, picosecond to sub-100 fs pulse duration, single-shot to GHz repetition rate, and nJ to >10 µJ pulse energy. Contact: Lalit B. Sharma, Head of Sales & Marketing, lalit.sharma@onefive.com; Lukas Krainer, CEO, lukas.krainer@onefive.com.

**Ontar Corp.**

#1018

SPIE Corporate Member

9 Village Way, North Andover, MA, 01845  
+1 978 689 9622; fax +1 978 681 4585  
sales@ontar.com; www.ontar.com

Ontar Corporation est. 1981 is an R&D software company. We sell software for optical atmospheric remote sensing. Products calculate gas transmission and evaluate sensor performance. PcModWin5, HITRAN PC, PcLnWin, PcNvMod, LIDAR PC, MODTRAN and ALTM. Applications include; laser spectroscopy, atmospheric transmission, smart weapons for defense applications, EO sensors development/evaluations, ground and satellite image correction, hyper spectral imaging, laser comm. and LIDAR apps. Contact: Michelle Roig, Executive assistant, mroig@ontar.com; Dylan Payne, Administrative Assistant, dpayne@ontar.com.

**Onyx Optics Inc.**

#1107

6551 Sierra Ln, Dublin, CA, 94568  
+1 925 833 1969; fax +1 925 833 1759  
lreo@onyxoptics.com; www.onyxoptics.com

Onyx Optics' product capabilities include Adhesive-Free Bonded (AFB®) crystal and glass laser components such as laser rods, slabs, disks, and waveguiding structures. We work with materials such as doped and undoped YAG, YLF, YVO4, sapphire, diamond, and spinel, as well as many others. Our patented composite technology enables higher efficiency, more compact, and higher power solid state laser and photonic devices. Contact: Lesley Reo, Sales & Marketing Manager, lreo@onyxoptics.com; Corinna Meissner, Sales Associate, cmeissner@onyxoptics.com.



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**Opgal Ltd.**

#911

SPIE Corporate Member

Industrial Area 5, PO Box 462, Karmiel, Israel, 20101  
+972 4 995 3903; fax +972 4 995 3900  
almany@opgal.com; www.opgal.com

**Featured Product: Eye-RCORE a TECless and Shutterless 17µ modular platform of microbolometer detectors (VOx and ASI).**

Opgal is a worldwide leading global manufacturer and supplier of thermal imaging solutions. Having experience for over 28 years of implementing its advanced thermal imaging technologies in complex and specialized military applications for world top defense establishments, Opgal offers a diverse range of high quality thermal imaging system solutions for defense, commercial and HLS applications utilizing the company's "Eye-QTM" advanced signal processing technology, providing ultimate results. Contact: Sylvie Dascalu, V.P Sales & Contracts, dascalu@opgal.com; Orly Jacob, Marketing, jacob\_orly@opgal.com.



# Exhibitor Directory

## Ophir Optics, LLC

#1207

1600 Osgood St, North Andover, MA, 01845  
+1 978 657 6410; fax +1 978 657 6056  
optics@ophiroptics.com; www.ophiroptics.com

Manufacturer of precision infrared optical assemblies, reflective and refractive components and IR optical coatings (including hard carbon). Specializes in custom IR lens assemblies for IR cameras; conventional optical fabrication and diamond turning; and CO<sub>2</sub> laser optics. ISO 9001:2008 certified and supports US military specifications. Contact: Glenn Breeze, Director Sales & Marketing, glenn.breeze@ophiroptics.com; Marianne Cannizzaro, Sales Associate, m.cannizzaro@ophiroptics.com.

## Ophir Photonics LLC

#106

**SPIE** Corporate Member

60 W 1000 N, Logan, UT, 84321  
+1 435 753 3729; fax +1 435 753 5231  
sales@ophir-spiricon.com; www.ophiropt.com

**Featured Product: Pyrocam III is a solid state camera for the measurement and alignment of UV, IR and FIR lasers.**

Ophir Photonics aka Ophir-Spiricon & Ophir-Photon, offers a complete line of laser test & measurement products including laser power & energy meters, camera based and scanning slit beam profilers, and laser propagation analyzers. Contact: Chuck Reagan, Regional Sales Manager, chuck.reagan@us.ophiropt.com; Kevin Kirkham, Product Specialist - Beam Profiling, kevin.kirkham@us.ophiropt.com.

## Optical Support, Inc.

#238

**SPIE** Corporate Member

7840 E Broadway Blvd Ste 160, Tucson, AZ, 85710  
+1 520 546 0642; fax +1 520 545 0376  
sgarcia@opticalsupport.biz; www.opticalsupport.biz

Optical Support provides complete optomechanical design and prototyping services. Starting with a design concept, system requirements or an optical prescription, we provide complete optomechanical system design, assembly, alignment and testing. We are facilitated with a fully operational CNC machine shop, clean optical assembly workstations test and alignment equipment for visible and NIR applications. Save your team time and money to manage other efforts by succeeding with Optical Support. Contact: Michael Savard, President, msavard@opticalsupport.biz.

## OPTICS 1, Inc.

#517

**SPIE** Corporate Member

1050 Holt Ave Ste 12, Manchester, NH, 03109  
+1 603 296 0469; fax +1 603 296 0473  
dtomasso@optics1.com; www.optics1.com

Optics 1 Inc. is a global technology leader in design, engineering, and production of integrated electro-optical systems for Defense applications. Our soldier systems division manufactures high performance, light weight, low power night vision goggles, clip-on thermal imagers (COTI), fused UV/SWIR binoculars, and integrated systems with GPS, compass, and laser range finders. The surveillance systems division can deliver large multi-spectral airborne/shipborne and ground systems. Contact: James Diamond, Sales & Marketing, jdiamond@optics1.com; Darlene Tomasso, Admin. Asst., dtomasso@optics1.com.

**PROMOTIONAL PARTNER**

## optics.org

#1212

2 Alexandra Gate, Ffordd Pengam, Cardiff, United Kingdom, CF24 2SA  
+44 117 905 5330; fax +44 117 905 5331  
rob.fisher@optics.org; optics.org

Optics.org is the longest-running online resource targeted toward OEMs and system integrators in the core growth markets for photonics applications, and is your gateway to thousands of potential new customers looking to buy your products and services. From LEDs to industrial lasers and from sensing to microscopy, optics.org covers all the latest company, product and business news as well as in-depth articles on product application and market analysis.

## Optiforms

#1139

**SPIE** Corporate Member

42310 Winchester Rd, Temecula, CA, 92590  
+1 951 296 1300; fax +1 951 296 1178  
sales@optiforms.com; www.optiforms.com

World leader in precision electroformed optics, cold shields, and specialized miniature structures. We offer electroformed standard and custom geometric shapes; thin film vacuum deposited optical coatings, electrodeposited metals such as High Density Gold or Rhodium, cold shields, EDM, assemblies, EMI shields, radiation shields, and reflector refurbishment. Recently celebrating 25 years of unmatched excellence in the optics industry, we welcome new custom applications. Contact: Donna Stice, Customer Service Manager, dstice@optiforms.com; Mike Birdsell, Sales Engineer, mbirdsell@optiforms.com.

## Optikos Corp.

#1007

**SPIE** Corporate Member

107 Audubon Rd Bldg 3, 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.

#224

**SPIE** Corporate Member

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

**Featured Product: Custom windows and domes manufactured from hard optical ceramics w/ visible to mid-IR transmission.**

Optimax is America's largest prototype optics manufacturer, with more than 100 opticians. Our innovative manufacturing and progressive corporate culture enable 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 for predictable removal, Optimax meets tight tolerances and tight delivery schedules. Contact: Jamie Hutchins, Sales Engineer, jhutchins@optimaxsi.com; Rick Plympton, CEO, rick@optimaxsi.com.



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# Exhibitor Directory

## OptiPro Systems

SPIE Corporate Member

6368 Dean Pky, Ontario, NY, 14519  
+1 585 265 0160; fax +1 585 265 9416  
sales@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.

#225

## Opto-Alignment Technology, Inc.

SPIE Corporate Member

1034-A Van Buren Ave, Indian Trail, NC, 28079  
+1 704 893 0399; fax +1 704 893 0403  
sales@optoalignment.com; www.optoalignment.com

**Featured Product: Ultra precision lens centering and aligning instrument for visible and IR optical systems assembly.**

US manufacturer of Lens Assembly, Alignment & lens Centration Equipment & provider of lens system ASSEMBLY SERVICES. The LASER ALIGNMENT STATION provides the most accurate sub-micron centration and tilt measurement for spheric, aspheric, cylindrical & parabolic lenses with or without AR coating, UV to LWIR. We offer LENSHANDLER and ROTOWAND vacuum pick-up tools, & lint free lens wipes. Contact: Steve Bohuczky, Director of Business Development, steve.bohuczky@optoalignment.com.

#436

## OptoElectronic Components

SPIE Corporate Member

28 Des Lilas, Kirkland, QC, Canada, H9J 4A7  
+1 514 694 0336; fax +1 514 694 8535  
sales@optoelectroniccomponents.com; www.optoelectroniccomponents.com

**Featured Product: Infrared Photon Counting Modules based on Superconducting Nanowires.**

Supplier of single photon counting detector modules with 30ps timing resolution from Micro Photon Devices, TCSPC electronics and software from PicoQuant, and Infrared Photon Counting Detector Modules based on Super Conducting Nanowires from PhotonSpot. OptoElectronic Components also builds custom modules for demanding light detection applications. Contact: Nick Bertone, President, Nick.Bertone@optoelectroniccomponents.com; Natalie Raymond, Marketing, Natalie.Raymond@optoelectroniccomponents.com.

#3414

## Optometrics Corp.

SPIE Corporate Member

8 Nemco Way, Ayer, MA, 01469  
+1 978 772 1700; fax +1 978 772 0017  
sales@optometrics.com; www.optometrics.com

**Featured Product: Diffraction gratings for UV, VIS, NIR, IR & gratings ruled in gold. Interference filters for UV-NIR.**

For more than 40 years, Optometrics has been the OEM instrument manufacturer's one stop for wavelength selection solutions, from diffraction gratings & interference filters to IR laser products, as well as monochromators & optical systems. Core competencies are grating mastering, holographic and ruled, as well as full replication facilities. Contact: Mark Walsh, Sales and Marketing Director, mwalsh@optometrics.com; Laura Lunardo, COO, lauras@optometrics.com.

#3214

## Optonetic LLC

SPIE Corporate Member

6901 TPC Dr Ste 500, Orlando, FL, 32822  
+1 407 857 4410; fax +1 407 857 4409  
sales@optonetic.com; www.optonetic.com

**Featured Product: 3-5 micron BBAR coating (T > 98%) on CaF<sub>2</sub> without the use of radioactive chemicals.**

Optonetic utilizes the latest evaporation techniques including: Cold Plasma Assist, Hot Plasma Assist and Ion Assist. Our technologies allow us to design and manufacture coatings from 193nm to 12µm. Antireflection, High Reflectors, Filters, Mirrors, Ultra High LDT, Beamsplitters, Polarization Coatings, Telecom and Infrared are all part of Optonetic's thin-film offering. Our goal is superior quality, industry leading 48 hour turnaround times and competitive pricing. Contact: Mark Oberdzinski, Sales Engineer, mark@optonetic.com.

#207

## Opnext, Inc.

6429 Landing Pkwy, Fremont, CA, 94538  
bmurphy@opnext.com; www.opnext.com

Opnext offers one of the industry's most comprehensive portfolios of laser diodes, spanning from 635nm to 850nm, driven by more than 30 years of innovative laser heritage. Opnext high quality, reliable red and infrared laser diodes are proven to consume a low operating current, which extends battery life, while still maintaining the integrity of the laser diode power in a variety of applications such as gun sights, rangefinders, line leveling construction systems and biomedical applications.

#1324

## OptoSigma Corp.

SPIE Corporate Member

2001 Deere Ave, Santa Ana, CA, 92705  
+1 949 851 5881; fax +1 949 851 5058  
sales@optosigma.com; www.optosigma.com

OptoSigma, a global manufacturer of optical components, opto-mechanics, manual and motorized positioners, optics and specialized optical coatings. Offers optical and mechanical engineering support, and off-the-shelf availability of over 4000 components. Choose OptoSigma for the quality, support and on-time solutions. From Prototype to production, catalog or custom, OptoSigma is your first and last choice for all your needs. www.optosigma.com. Click to get a NEW 2010 OptoSigma free catalog. Contact: Clayton Summers, Mechanical Engineer, Product Manager, clayton@optosigma.com; Andrew CLawson, Optics, Optical Coatings Manager and Optics Product Manager, andrew@optosigma.com.

#331

PROMOTIONAL PARTNER

## Optronics Co., Ltd. (The)

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: IR + UV EXPO 2012.**

As the only exhibition in Japan dedicated specifically to IR products and services, IR + UV EXPO 2012 is the best opportunity to find the most interested and motivated buyers and decision makers, who will be eager to see the very latest in IR products, technologies and services. Please stop by our booth for further information about the exhibition. Contact: Sakae Shibasaki, intl@optronics.co.jp.

#3900



**Orbits Lightwave, Inc.**

#1341

SPIE Corporate Member

41 S Chester Ave, Pasadena, CA, 91106  
+1 626 713 7401; fax +1 626 713 7410  
dmcmillan@hotmail.com; www.orbitlightwave.com

**Featured Product: Orbits Lightwave manufacture Eternal™ SlowLight™ lasers, the lowest noise laser in the world.**

Orbits Lightwave manufacture the state of the art in ultra-low noise lasers and ultra-narrow optical filters. Eternal™ SlowLight™ technology dramatically improves our laser noise, by extending the cavity lifetime and StableLase™ packaging protects the laser from adverse environmental conditions giving us the lowest noise laser in the world. Period. Orbit also offers the state of the art in custom in-line ultra narrow filters. Contact: Duncan McMillan, Application Engineer, dmcmillan@orbitlightwave.com.

**OSA - The Optical Society**

#104

2010 Massachusetts Ave NW, Washington, DC, 20036-1023  
+1 202 223 8130; fax +1 202 223 1096  
info@osa.org; www.osa.org

**OZ Optics Ltd.**

#938

SPIE Corporate Member

219 Westbrook Rd, Ottawa, ON, Canada, K0A 1L0  
+1 613 831 0981; fax +1 613 836 5089  
sales@ozoptics.com; www.ozoptics.com

**Featured Product: The Distributed Sensor simultaneously measures strain and temperature using standard telecom fiber.**

Fiber Optic Test Equipment, Mini-Power Meters, Power Meter with Smart Detector Head, OTDR/Fault-Finder, Smart Patchcords, Fiber Length Meter, Backreflection-Meter, Fixed/Tunable/Digital Filters, Optical Delay Lines, Visual Fault Locators, Stable LED/LD Light Sources, Fixed/Variable/Digital Attenuators, MEMS Variable Attenuators, Extinction Ratio Meter, Polarized Sources, Power Monitors, PDL Emulators, Environmental Test Sets. Contact: Omur Sezerman, CEO & President, sales@ozoptics.com.

**Panavision Federal Systems**

#3503

21300 Victory Blvd Ste 840, Woodland Hills, CA, 91367-8021  
+1 818 594 8006; fax +1 818 594 8001  
nolan.murdock@panavision.com; www.panavision.com

**Featured Product: Small 3D high definition camera.**

Optical Systems, zooms, broad spectrum and IR lenses, prisms. Mechanical Design E/O structures. Image Processing, stitching of multiple images. System Integration. Contact: Nolan Murdock, VP Marketing, nolan.murdock@panavision.com; Clive Towndrow, VP and General Manager, clive.towndrow@panavision.com.

**PENTAX**

#410

600 12th St Ste 300, Golden, CO, 80401  
+1 303 728 0227; fax +1 303 728 0206  
susie.jordan@pentax.com; www.pentaxcctvus.com

**Featured Product: PAIR02 - 55x zoom lens eliminates fog/smoke/haze plus heat-haze reduction, and image stabilization.**

PENTAX Imaging Company is an innovative leader in the production of security lens products for facilities, as well as mid-range and long-range surveillance applications. PENTAX also manufactures high-quality machine vision lenses, digital SLR systems, and sports optics. For over 90 years, PENTAX has developed durable, reliable, high-performance products that meet the needs and exceed the expectations of consumers and businesses. Headquartered in Golden, Colorado, PENTAX Imaging Company is a division of Hoya Corporation. Contact: Susie Jordan, Sales Support Administrator, susie.jordan@pentax.com; Andrew Shemo, Technical Sales Executive, andrew.shemo@pentax.com.

**PFG Precision Optics**

#100

SPIE Corporate Member

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

**Featured Product: Expanded capability for manufacturing UV to IR optical components & coatings.**

ISO 9001:2008 certified manufacturer of precision optical components, coatings, and assemblies from UV to IR wavelengths. PFG specialties include high index, high included angle & truncated lenses using the latest CNC milling, shaping, & polishing with MRF finishing & edging technology. Double sided & planetary polishing for Windows, Wedges, Filters, & Prisms. Custom vacuum-deposited & Ion-assisted coatings. Contact: Colin Green, VP Sales, cody@pfgoptics.com; Travis Green, President, tygreen@pfgoptics.com.

**Phase Sensitive Innovations**

#3306

51 E Main Street, Suite 201, Newark, DE, 19711  
+1 302 456 9003; fax +1 302 456 9004  
info@phasesensitiveinc.com; www.phasesensitiveinc.com

Phase Sensitive Innovations is a privately-owned company specializing in passive millimeter-wave (mmW) imaging solutions for the DoD. We also develop RF and photonic components, W-Band electro-optical modulators, mmW scene simulation software, IED detection, and integration services. We will be demonstrating how our unique mmW imaging technology can help helicopter pilots see through "brownout conditions" in real-time when landing in desert environments. For more: www.phasesensitiveinc.com. Contact: Rick Martin, PhD, COO, martin@phasesensitiveinc.com.

**PHASICS SA**

#1513

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

**Phillips Plastics Corp.**

#636

1201 Hanley Rd, Hudson, WI, 54016  
+1 715 386 3200; fax +1 715 381 3290  
info@phillipsplastics.com; www.phillipsplastics.com

Phillips Plastics Corp has served original equipment manufacturers in virtually every market since 1964 and grown to become a premiere designer and manufacturer of custom plastic, metal, magnesium, ceramic, and silicone injection-molded components. Our talent, technology and infrastructure provide cutting-edge solutions to even the toughest molding challenges. Our expertise in defense provides a trusted source for the successful development of concepts - from drawing board to packaged products. Contact: Opportunity Development, info@phillipsplastics.com.

**Phoenix Infrared**

#114

3 Foundry St, Lowell, MA, 01852  
+1 978 458 8328; fax +1 978 458 8414  
sales@phoenixinfrared.com; www.phoenixinfrared.com

## Phoenix Optical Technologies Ltd. #431

Glascod Rd, St Asaph, United Kingdom, LL17 0LJ  
+1 44 1745 584 484; fax +1 44 1745 584 050  
sales@potl-ltd.co.uk; www.potl-ltd.co.uk

### Featured Product: Diamond-turned lenses, ITO coated windows.

Manufacturer of IR optics and diamond-turned components with aspheric, diffractive & free-form surfaces in IR materials, plastics and metals; Polished & coated windows from prototype to high-volume production; Optical glass strip, molded and CNC-machined blanks of all optical materials. Contact: Buzz Nesti, sales@nakedoptics.com; Peter Williams, pete@potl-ltd.co.uk.

## Photek Limited #1423

26 Castleham Rd, St Leonards-on-Sea, East Sussex, United Kingdom, TN38 9NS  
+44 1424 850 555; fax +44 1424 850 051  
sales@photek.co.uk; www.photek.co.uk

### Featured Product: Solar blind image intensifier for missile warning systems.

Photek is a specialist manufacturer of detectors and camera systems for photon detection operating in the defense, industrial and scientific sectors. Our product range includes; image intensifiers, photomultipliers, streak tubes, miniature high voltage power supplies and gating modules. We are experts in UV and solar blind detection, ultra-fast photomultipliers, large area image intensifiers and advance photon counting camera systems. Contact: Ian Cox, Sales and Marketing Manager, ian.cox@photek.co.uk; Dan Rao, US Sales, DanR@sydorinstruments.com.

## Photon Engineering, LLC #236

**SPIE** Corporate Member

440 S Williams Blvd Ste 106, Tucson, AZ, 85711  
+1 520 733 9557; fax +1 520 733 9609  
info@photonengr.com; www.photonengr.com

### Featured Product: FRED, the premier proven software to solve today's challenging optical engineering problems.

Photon Engineering, LLC is a consulting and software development firm based in Tucson, Arizona. Photon Engineering develops and markets FRED, the premier proven software to solve today's challenging optical engineering problems. Users working within FRED's 3D virtual prototyping CAD environment can model and analyze virtually any optomechanical system containing arbitrary coherent, incoherent, and partially coherent sources. Engineering consulting and short courses are offered worldwide. Contact: Donata Pfisterer, Sales, donatap@photonengr.com; Ryan Irvin, Technical Sales, ryani@photonengr.com.

## Photon Spot Inc. #3414

88 Oxford St, Arlington, MA 02474  
+1 626 344 7768  
info@photonspot.com; www.photonspot.com

### Featured Product: Infrared Photon Counting Modules based on Superconducting Nanowires.

Photon Spot, Inc. is an MIT-spinoff commercializing photon counting detector modules for near-infrared frequencies. These photon counting modules will have photon detection efficiencies of 20-50% at 1550nm, dead times of less than 50 ns, and sub-30ps timing resolution. Contact: Dr. Vikas Anant, info@photonspot.com; Natalie Raymond, Marketing, Natalie.Raymond@optoelectronics.com.

## Photonic Cleaning Technologies #218

1895 Short Ln, Platteville, WI, 53818  
+1 608 467 5346

sales@photoniccleaning.com; www.photoniccleaning.com

### Featured Product: Safely clean and protect nanostructures, mirrors, optics, sensors and other precision surfaces.

FIRST CONTACT Polymer Solutions. Contact: Erica Wulff, Business Manager, wulffe@photoniccleaning.com; James Hamilton, CTO, wulffe@photoniccleaning.com.

## Photonic Products Group Inc. #322

**SPIE** Corporate Member

181 Legrand Ave, Northvale, NJ, 07647  
+1 201 767 1910; fax +1 201 767 9644  
sales@ppgrpinc.com; www.ppgrpinc.com

PPGI develops, manufactures, and markets products and services for use in diverse Photonics industry sectors via distinctly branded businesses. INRAD specializes in crystal-based optical components and devices, laser accessories and instruments. Laser Optics in precision custom optical components, assemblies, and optical thin film coatings. MRC Optics' in precision diamond turned optics, metal and crystal based optics, and opto-mechanical. Contact: Jeff Brunner, Director of Sales & New Business Development, N.A., jbrunner@ppgiptics.com; George Murray, West Coast Sales Manager, gmurray@ppgiptics.com.

## Photonic Sense GmbH #1222

Am Goldberg 3, Eisenach, Germany, 99817  
+49 369173180; fax +49 3691731879  
info@photonic-sense.com; www.photonic-sense.com

Photonic Sense is a world-class manufacturer of the highest quality GERMANIUM and SILICON for infrared optics. We offer a wide range of sizes and specifications to meet standard and custom requirements for defense & security or commercial applications. ITAR registered and TAA approved. Contact: Dawn Jennings, Sales & Marketing, dawn@photonic-sense.us.com; Andreas Zickler, Sales, azickler@photonic-sense.com.

### PROMOTIONAL PARTNER

## Photonics Media #830

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: Jason Camboni, Regional Manager, photonics@laurin.com; Laura Marshall, Managing Editor, editorial@laurin.com.

## Photonics Online #3102

2591 Wexford Bayne Rd, Sewickley, PA 15143  
+1 724 940 7555; fax +1 724 940 7707  
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; Josh Butia, Web Editor, jbutia@vertmarkets.com.

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### Photonic-Sourcing

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 +1 418 655 7578  
[joan.beeson.healy@photonic-sourcing.com](mailto:joan.beeson.healy@photonic-sourcing.com);  
[www.photonic-sourcing.com](http://www.photonic-sourcing.com)

**Featured Product: Buyer can find suppliers using the most advanced search specifically for photonics products.**

Photonic-Sourcing.com has created a robust search and profile system to help match buyers with the products they need in two clicks. Suppliers will find new RFPs posted daily as well as quality business leads from companies looking for specific products for their projects across industries. Register today on [photonic-sourcing.com](http://photonic-sourcing.com) for 30-days free access to all premium services. Contact: Joan Beeson-Healy, Managing Director, [joan.beeson.healy@photonic-sourcing.com](mailto:joan.beeson.healy@photonic-sourcing.com).

#3106

### Photron

SPIE Corporate Member

9520 Padgett St Ste 110, San Diego, CA, 92126  
 +1 858 684 3555; fax +1 858 684 3558  
[image@photron.com](mailto:image@photron.com); [www.photron.com](http://www.photron.com)

**Featured Product: FASTCAM SA-X - Mega pixel resolution to 10,000 frames per second high speed camera.**

Photron is a leading manufacturer and supplier of high speed cameras. From low cost PC based solutions, through specialized intensified systems for biofluorescence, 1080 HDTV at 2,000 fps for motion picture/broadcast work, production faultfinding systems with multiple tiny camera heads, to the world's fastest high speed video cameras, plus systems engineered to operate reliably under hostile high-G conditions. Photron has a solution whatever your high speed imaging application. Contact: Andrew Bridges, Director, Sales & Marketing, [abridges@photron.com](mailto:abridges@photron.com); Shun Motoyama, Sales Manager, [motoyama@photron.com](mailto:motoyama@photron.com).

#404



### Free Popcorn

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Popcorn carts will be open Tuesday and Wednesday from 11:00 am to 3:00 pm; Thursday from 11:00 am to 2:00 pm.



# Exhibitor Directory

## Physical Optics Corp.

#1500

20600 Grammercy Pl Ste 103, Torrance, CA, 90501-1870  
+1 310 320 3088; fax +1 310 320 5961  
www.poc.com

POC will have on display: WEARNET® Wearable Personal Area Network, using SNAPNET® connectors; MAAPS™ Wearable Power Management, SITA™ Flexible PDA and Wearable Display. 360° 180° High Resolution Video Surveillance with Electronic Zoom, Omnitrac™ Tracking and Surveillance with Encrypted Wireless Software, BRAVR® - Blast Survivable Memory Storage, 3D Video Displays, PASTOR™ - Standoff IED Threat Detection and OPST™ Laser Optical Proximity Sensor for Lethal & non-Lethal munitions. Contact: Dave Silvestris, Director Business Development, dsilvestris@poc.com; Megan Shie, Government Relations Administrator, mshie@poc.com.

### PROMOTIONAL PARTNER

## Physics Today

#L1

One Physics Ellipse, College Park, MD, 20740  
+1 301 209 3100; fax +1 301 209 0842  
www.physicstoday.org

### Featured Product: Free sample copies of Physics Today.

Physics Today has been published by the American Institute of Physics (AIP) for more than 60 years. It is the foremost physics magazine in the world, delivered to 120,000 members of 10 different physics societies--including 30,000 members outside the USA. www.physicstoday.org is the destination of 140,000 unique visitors each month. Contact: Randolph A. Nanna, Publisher, Rnanna@aip.org; Jeff Bebee, Marketing Dir, Magazines, jbebee@aip.org.

## Physimetrics, Inc.

#1332

5020 Old Ellis Point Ste 100, Roswell, GA, 30076  
+1 770 642 6858 ext. 11; fax +1 770 642 0160  
ruben@physimetrics.com; www.physimetrics.com

### Featured Product: HD and smart camera technology. Advanced image processing functions.

Physimetrics is a machine vision and image processing solutions provider. We offer components such as cameras, lenses, frame grabbers, cables, software plus we offer complete engineering and software development services. Contact: Ruben Uribe, President, ruben@physimetrics.com; Van Phillips, Sales Engineer, vanp@physimetrics.com.

## PI (Physik Instrumente) LP

#1201

SPIE Corporate Member

16 Albert St, Auburn, MA, 01501  
+1 508 832 3456; fax +1 508 832 0506  
info@pi-usa.us; www.pi-usa.us

### Featured Product: M-810 Miniature Hexapod 6-axis Optics Alignment/Collimation System.

ITAR Certified Leader in Piezo Technology, Nanopositioning & Precision Motion Control. Nonmagnetic Ceramic Actuators; Linear Motors; Multi-Axis Hexapod 6D Alignment Systems; High/Low Bandwidth Steering Mirrors, Image Dithering, Bio-Imaging; Smart Actuators; Fast XY Piezo Scanners, Ultrasonic & High Force Piezomotors; Custom Piezo Assemblies; Long Life Multilayer Piezos; Power Amps w/Energy Recovery; Capacitive Sensors; Advanced Digital Piezo Controllers; Improved Settling, Speed, Linearity. Contact: Sales Department, info@pi-usa.us.

## PicoQuant GmbH

#3414

Rudower Chaussee 29, Berlin, Germany, 12489  
+49 30 6392 6560; fax +49 30 6392 6561  
www.picoquant.com

### Featured Product: Yellow picosecond pulsed diode laser with variable repetition rate (595nm).

PicoQuant GmbH is a research and development company in the field of optoelectronics. Founded in 1996, the company is based in Berlin, Germany and is a worldwide leader in the field of single photon counting applications. The product line includes pulsed diode lasers and LEDs, photon counting instrumentation, fluorescence lifetime spectrometers and time-resolved confocal microscopes. Since April 2008, Sales and Support in North America is handled by PicoQuant Photonics North America Inc. Contact: Nick Bertone, sales@optoecomponents.com; Natalie Raymond, Marketing, Natalie.Raymond@optoecomponents.com.

## Plasma-Therm LLC

#3001

SPIE Corporate Member

10050 16th St N, St. Petersburg, FL, 33716  
+1 727 577 4999  
information@plasmatherm.com; www.plasmatherm.com

Plasma-Therm LLC., designs, manufactures, sells and supports plasma etch and plasma enhanced chemical vapor deposition (PECVD) equipment to semiconductor device manufacturers. These systems are used in applications ranging from leading edge R&D to high volume production. Our served markets include Photomask Etching, Wireless communication, MEMS, Nanotechnology, Data Storage, Solar Cells and LED/Photonics Processing. Contact: Brad Williford, Regional Sales Manager East Coast, Brad.williford@Plasmatherm.com; Paul Sadlek, Regional Sales Manager West Coast, paul.sadlek@plasmatherm.com.



### METER BOARD SPONSOR

## Pleora Technologies Inc.

#406

359 Terry Fox Dt Ste 230, Kanata, ON, Canada, K2K 2E7  
+1 613 270 0625; fax +1 613 270 1425  
info@pleora.com; www.pleora.com

### Featured Product: Transmit standard definition video over GigE with Pleora's iPORT™ Analog-Pro SD IP engine.

Pleora Technologies Inc. pioneered the use of Gigabit Ethernet for real-time video connectivity and revolutionized industrial imaging. Working from its rich portfolio of video network elements, Pleora engineers networked connectivity solutions for mission-critical applications, from definition to deployment, with full integration support. Find out why more military, medical, and manufacturing integrators and OEMs choose Pleora and stay – visit www.pleora.com. Contact: John Butler, Business Manager - NA, sales@pleora.com; Rob Lee, Vice President - Marketing & Sales, sales@pleora.com.

## PLX, Inc.

#223

25 W Jefryn Blvd, Deer Park, NY, 11729  
+1 631 586 4190; fax +1 631 586 4196  
info@plxinc.com; www.plxinc.com

### Featured Product: PLX's Boresighting Verification Technology dramatically enhances targeting capability.

PLX provides unique optical instruments, technologies and solutions to problems of achieving and maintaining state-of-the-art optical accuracy and stability under severe environmental conditions. Our (M.O.S.T.) Monolithic Optical Structure Technology integrates complex optical elements into compact monolithic structures to achieve these objectives. PLX is one of the world's leading manufacturers of Monolithic Optical Structures for military, aerospace and industrial applications. Contact: Jack Lipkins, CEO, JL@plxinc.com; Zvi Bleier, CTO, ZB@plxinc.com.

**Poco Graphite, An Entegris Company #305**

300 Old Greenwood Rd, Decatur, TX, 76234  
+1 940 627 2121; fax +1 940 393 8366  
www.poco.com

**Featured Product: SUPERSiC silicon carbide for laser, sensor, surveillance & astronomy applications.**

SUPERSiC® silicon carbide mirrors and optical components for laser, sensor, surveillance & astronomy applications. The flexibility of SUPERSiC allows for the efficient manufacture of lightweight, complex geometries and structures. Components can then be finished with a polishable CVD SiC coating or clad with silicon for diamond turning. Silicon Carbide is the material of choice for advanced optical applications; including Beryllium replacement & high heat flux scenarios. Contact: Chris Duston, Optics Specialist, chris\_duston@entegris.com; Wayne Hambek, Director, wayne\_hambek@entegris.com.

**PolarOnyx, Inc. #1011**

**SPIE** Corporate Member

2526 Qume Dr Ste 17&18, San Jose, CA, 95131  
+1 408 573 0931; fax +1 408 573 0932  
sales@polaronyx.com; www.polaronyx.com

**Featured Product: Compact high power/energy fs fiber laser.**

World leading company in high energy/power ultrashort (fs, ps, ns) fiber lasers. Excellent for material processing, micromachining, spectroscopy, microscopy, biomedical instrumentation & optical sensing applications. OEM and instrument version are available. Wavelength ranges from UV to Mid-IR. Contact: Lihmei Yang, Director Sales & Product, lihmeiyang@polaronyx.com. Contact: Lihmei Yang, Director, lihmeiyang@polaronyx.com; Jian Liu, President, jianliu@polaronyx.com.

**PROMOTIONAL PARTNER****Pollution Equipment News #1211**

Rimbach Publishing Inc, 8650 Babcock Blvd, Pittsburgh, PA, 15237  
+1 412 364 5366; fax +1 412 369 9720  
karen@rimbach.com; www.rimbach.com

**Featured Product: Publications: POLLUTION EQUIPMENT NEWS, INDUSTRIAL HYGIENE NEWS.**

POLLUTION EQUIPMENT NEWS provides product information to the person responsible for air, water, wastewater pollution control and hazardous waste disposal. INDUSTRIAL HYGIENE NEWS provides information on products and services for measuring and controlling various health hazards in the work environment. Contact: Karen Galante, karen@rimbach.com.

**POLUS-ST LTD. #1422**

9 bldg, Trofimova St, Moscow, Russia, 115432  
+7 495 380 1980  
info@radiobarrier.ru; www.radiobarrier.com

**Featured Product: The RADIOBARRIER Wireless Intrusion Detection System is protection of extended terrain areas.**

Innovative Company POLUS-ST LLC has the 11 years of experience in the world security systems market. The core business of the Company is developing and manufacturing RADIOBARRIER Wireless Battery Operated Intrusion Detection System that is used for monitoring, surveillance and protection of extended terrain areas, perimeters of facilities of high importance. Reliability and high quality of our products is the top priority for us. Contact: Vasily Tanailov, International Sales and Marketing Manager, tv@radiobarrier.ru; Irina Rogozinskaya, Foreign Activity Manager, ir@radiobarrier.ru.

**Polymer Optics, LLC #122**

**SPIE** Corporate Member

3100 Dutton Ave Unit 118, Santa Rosa, CA, 95407  
+1 707 573 5929; fax +1 707 573 5951  
info@polyoptics.com; www.polyoptics.com

Manufacturer of precision plastic optical components in prototype and production volumes. In-house capabilities include optomechanical design, diamond machining, mold design and manufacturing, injection and compression molding, and thin-film design and deposition of optical coatings on plastic. Contact: Daniel Fisher, dan@polyoptics.com.

**Power Technology, Inc. #1324**

**SPIE** Corporate Member

PO Box 191117, Little Rock, AR, 72219-1117  
+1 501 407 0712; fax +1 501 407 0036  
ptmarketing@powertechnology.com;  
www.powertechnology.com

**Featured Product: Green Laser Diode Modules (non-DPSS) 517nm 5mW Solutions for High-End Weapons Sighting Applications.**

Power Technology, Inc., an ITAR registered company established in 1969, designs, manufactures, and distributes laser diode products (263nm-13.900nm) for military and defense applications. These include target designation, range finding, illumination for night vision (NVG/FLIR), aiming/sighting, and defensive countermeasures. The focus is on meeting the technically challenging, long-life cycle, high-mix, high-reliability requirements of Military, Aerospace, and Security customers. Contact: Walter Burgess, Vice President, Sales and Engineering, waburgess@powertechnology.com; Glenn Sullivan, Sales Engineer, gsullivan@powertechnology.com.

**Pranalytica, Inc. #101**

1101 Colorado Ave, Santa Monica, CA, 90401  
+1 310 458 3345; fax +1 310 458 0171  
fxmgcuire@pranalytica.com; www.pranalytica.com

**Precision Armaments Laboratory #3006**

Bldg 44, Picatinny Arsenal, NJ, 07806-5000  
+1 973 724 2460  
www.pica.army.mil/PAL

**Featured Product: 215' tower facility dedicated to testing and evaluating sensor/seeker performance in adverse weather.**

The Precision Armaments Laboratory (PAL) is a DoD facility established to provide a cost effective means to investigate, experiment and evaluate the life cycle aspects of sensor/seeker devices with respect to all-weather performance requirements. Located in NJ at Picatinny, the PAL is a unique facility of the US Army's ARDEC that provides laboratory grade infrared sensors, integrated MET instrumentation, and a fleet of autonomously heat controlled surrogate 2S3 self propelled howitzer targets. Contact: PAL Manager, Pica.Pal@conus.army.mil.

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## Precision MicroDynamics Inc.

#1431

SPIE Corporate Member

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

**Featured Product: Polaris, a motion control system, is ideal for coordinated control of galvanometer & gimbal systems.**

PMDi is a global leader in motion control. Our new product, Polaris, is the highest performing motion control system in the world. Polaris is ideal for galvanometer and gimbal system applications. Polaris components include: controllers, amplifiers, analog and digital I/O. Polaris uses Mercury, PMDi's patented Gbit/s real time network for communication. PMDi products enable the creation of world's most advanced ultra high performance machines. Contact: Tom Erlic, Co-Founder, terlic@pmdi.com; Mile Erlic, Co-Founder, merlic@pmdi.com.

## Precision Optical

#117

869 W 17th St, Costa Mesa, CA, 92627  
+1 949 631 6800; fax +1 949 642 7501  
sales@precisionoptical.com; www.precisionoptical.com

Manufacturer of laser-quality precision optical assemblies and components (VUV to IR) including prisms, mirrors, windows, retroreflectors, filters, plate-type beamsplitters, alignment cubes, polarizing and nonpolarizing cube beamsplitters and coatings. Contact Rod Randolph, President & C.O.O., rrandolph@precisionoptical.com; Jim McClure, VP of Sales, jmccclure@precisionoptical.com.

## Precision Optics Gera

#431

1090 Delacroix Circle, Nokomis, FL, 34275  
+1 908 685 0352; fax +1 908 325 0250  
www.pog.eu

**Featured Product: Optical systems, ITO coatings, OLED reticles.**

POG is a leading manufacturer of custom and standard microstructures on glass and ceramics – reticles, scales, calibration targets and test patterns. In-house photolithographic processes result in the highest possible quality for serial production and small batch quantities. POG designs, develops and processes custom optical systems and components from the UV through IR for machine vision, semiconductor industry, aerospace and defense. Contact: Ray George, ray.george@pog.eu; Buzz Nesti, buzz.nesti@pog.eu.

## Precision Rapid Etch

#537

SPIE Corporate Member

734 W Hawthorne Ln, West Chicago, IL, 60185-1968  
+1 630 876 1300  
dan@precisionrapidetch.com; www.precisionrapidetch.com

## Precitech, Inc., a division of AMETEK

#1022

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: Nanoform Ultra Precision multi axes diamond turning lathes.**

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. Our solutions are used in facilities around the world developing next generation technology that serve a variety of markets: Military and Defense, Optical systems and Ophthalmic, Medical implants, Biomedical sensors and instruments, and Automotive. Contact: Chris Stroshine, Sales Manager, chris.stroshine@ametek.com; Kirk Rogers, Sales Manager, kirk.rogers@ametek.com.

## Princeton Lightwave, Inc.

#3004

2555 Rte 130 S Ste 1, Cranbury, NJ, 08512  
+1 609 495 2600; fax +1 609 395 9114  
sales@princetonlightwave.com; www.princetonlightwave.com

**Featured Product: 3D LADAR imaging camera using GmAPD Focal Plane Array with time-of-flight data at every pixel.**

Princeton Lightwave produces high-performance InP photodetectors and laser diodes covering shortwave infrared wavelengths. Our extensive integration technologies enable solutions ranging from components to turn-key sub-systems for customers in defense, imaging, instrumentation, and optical communications markets. Key products include 1D and 2D focal plane arrays, FPAs and cameras for 3D LADAR, single photon detectors, avalanche photodiodes, high-power diode lasers, and superluminescent diodes. Contact: Joe Poekert, Business Manager, jpoekert@princetonlightwave.com; Jason De Luca, Customer Service, jdeluca@princetonlightwave.com.

## Princeton Scientific Corp

#1306

414 Wall Street, Princeton, NY, 08540  
+1 609 924 3011; fax +1 609 924 3018  
magdalena@princetonscientific.com;  
www.princetonscientific.com

Princeton Scientific offers and displays: Laser Rods, Optical Components, Opto-electronic Components, High Purity Metals & Metallic Single crystals, Special Sputtering targets. Also III-V, II-VI and III-VI Materials in Single or Poly Crystalline form. Contact: Magdalena Hyra, President, magdalena@princetonscientific.com; Hank Gerwers, Vice President, hank@princetonscientific.com.

## Proxitronic Detector Systems GmbH

#217

Robert-Bosch-Str 34, Bensheim, Germany, 64625  
+49 6251 17030; fax +49 6251 170380  
detector@proxitronic.com; www.proxitronic.com

## Pulse Instruments

#1419

1234 Francisco St, Torrance, CA, 90502  
+1 310 515 5330; fax +1 310 515 0068  
sales@pulseinstruments.com; www.pulseinstruments.com

**Featured Product: CCD/FPA test system with low noise clock drivers, biases and high speed data acquisition.**

Pulse Instruments is a leading manufacturer of systems and equipment for characterization and production test of image sensors. In addition to high-profile science applications, our equipment and systems are also used to test visible and infrared imaging devices for defense, security, commercial and industrial automation, machine vision and biomedical imaging applications. Our integrated test systems provide a flexible, expandable and cost effective solution to your testing requirements. Contact: Scott Williams, Director of Engineering, scott@pulseinstruments.com; Steven Kan, Vice President, steven@pulseinstruments.com.

## PVP Advanced EO Systems, Inc.

#1110

SPIE Corporate Member

14312 Franklin Ave Ste 100, Tustin, CA, 92780  
+1 714 508 2740; fax +1 714 508 2533  
info@pvpaao.com; www.pvpaao.com

**Featured Product: PVP Night Hawk Products feature direct-drive servo, 19 bit encoders, and open architecture.**

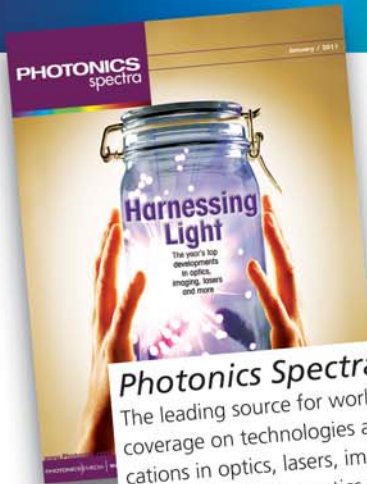
PVP Advanced EO Systems, Inc. provides high reliability Electro-Optical solutions directly to DOD, Homeland Security, and via associated primes. Applications include very high performance vehicle based surveillance, mobile weapon and situational awareness systems, and ultra-long range surveillance suites. Contact: William Jeffrey B.J. Rogers, Director, Sales, bj.rogers@pvpaao.com; Geoff Miller, Director, Engineering, Programs and Business Development, geoff.miller@pvpaao.com.



# Photonics Media

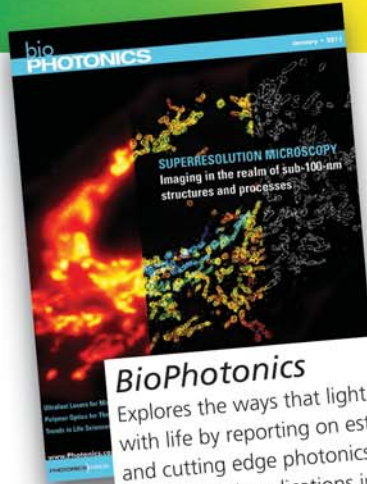
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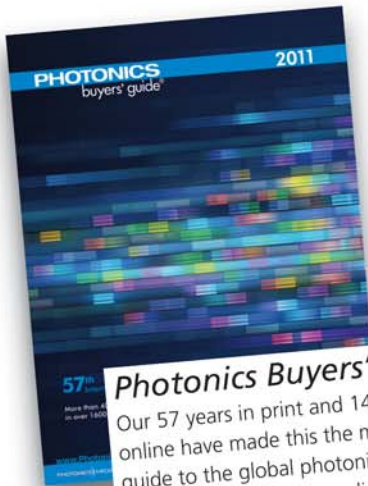
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## EuroPhotonics

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## Photonics.com

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# Exhibitor Directory

## PVP Advanced EO Systems, Inc. - Display #3713

SPIE Corporate Member

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+1 714 508 2740; fax +1 714 508 2533  
info@pvpaeo.com; www.pvpaeo.com

### METER BOARD SPONSOR

## Qioptiq

SPIE Corporate Member

Glascoed Rd, Ensign Way, St Asaph Denbighshire,  
United Kingdom, LL17 0LL  
+44 1745 588 000; fax +44 1745 584 258  
sales@uk.qioptiq.com; www.qioptiq.com

**Featured Product: Night vision and thermal weapon aiming and target sights for a wide variety of platforms.**

Qioptiq designs and manufactures photonic products and solutions that serve a wide range of markets and applications in the areas of medical and life sciences, industrial manufacturing, defense and aerospace, and research and development. Qioptiq benefits from having integrated the knowledge and experience of Avimo, Gsänger, LINOS, Optem, Pilkington, Point Source, Rodenstock, Spindler & Hoyer and others. Qioptiq's people work in Europe, Asia and the USA. More at [www.qioptiq.com](http://www.qioptiq.com). Contact: Patrick Gray, Business Development Director, US Defense, [patrick.gray@qdi.qioptiq.com](mailto:patrick.gray@qdi.qioptiq.com).

## QmagiQ, LLC

#415

22 Cotton Rd Unit H Ste 180, Nashua, NH, 03063  
+1 603 821 3092; fax +1 603 821 3094  
[www.qmagiq.com](http://www.qmagiq.com)

QmagiQ, LLC, designs and manufactures a variety of infrared focal plane arrays, sensor engines, and camera systems. Its products serve the commercial market for applications such as persistent surveillance, gas imaging, and radiometry. While the bulk of its products is currently based on Qwip detector arrays, QmagiQ is also vigorously pursuing the development of other promising technologies, notably strained-layer superlattices. Contact: Mani Sundaram, CEO/President, [msundaram@qmagiq.com](mailto:msundaram@qmagiq.com); Axel Reisinger, CTO, [areisinger@qmagiq.com](mailto:areisinger@qmagiq.com).

## QPS Photonics Inc.

#3617

217 St. Louis Ave, Pointe Claire, QC, Canada, H9R 5L7  
+1 514 697 4728; fax +1 514 697 8693  
[info@qpscom.com](mailto:info@qpscom.com); [www.qpsconduitmonitoring.com](http://www.qpsconduitmonitoring.com)

**Featured Product: Border Guard™ is a distributed and buried fiberoptics sensor network solution for border security.**

QPS Photonics has partnered with Cleveland laboratory to introduce this unique solution for border security, the first system that gives no false alarms, and provides real time detection of any intrusion events and their accurate locations. It features dynamic sensitivity control and signature recognition algorithms. QPS's mission is to help partners worldwide develop innovative fiber optics based distributed monitoring and sensing solutions involving hostile environment. Contact: Peter Kung, President, [peter@qpscom.com](mailto:peter@qpscom.com); Brad Taylor, Partner, [btaylor@cel-atq.com](mailto:btaylor@cel-atq.com).

## Quality Thin Films, Inc.

#430

141 Burbank Road, Oldsmar, FL, 34677  
+1 813 855 1900; fax +1 813 855 5580  
[sales@qtf.com](mailto:sales@qtf.com); [www.qtf.com](http://www.qtf.com)

Quality Thin Films supplies optics, laser crystals and thin film coatings. We specialize in ultra high damage threshold coatings on super polished crystals and optics, from the UV to the IR. State of the art equipment for substrate fabrication and leading edge coating chambers enable QTF to continuously improve on quality with emphasis on customer service. ISO 9001:2000 certified. Contact: Karl George, Jr., Vice President, [sales@qtf.com](mailto:sales@qtf.com); Sales Force, Sales, [sales@qtf.com](mailto:sales@qtf.com).

## Quantum Coating, Inc.

#1138

1259 N Church St, Moorestown, NJ, 08057  
+1 856 231 0706; fax +1 856 231 0709  
[danp@quantumcoating.com](mailto:danp@quantumcoating.com); [www.quantumcoating.com](http://www.quantumcoating.com)

**Featured Product: Broadband Antireflective (BBAR), Transparent Conductive (ITO), night vision instrumentation (NVIS).**

With state-of-the-art deposition equipment, glass fabrication, and metrology, QCI is now a premier supplier of coated display panels for avionics, military and medical applications. Awarded the contract to coat the (18) 1.3m Primary mirrors for the James Webb Space Telescope (JWST). We are dedicated to working with our customers by providing new technology solutions, offering greater value and committing to the highest standards of business practice. ISO 9001:2008 Certified and ITAR compliant. Contact: Daniel Patriarca, President, [danp@quantumcoating.com](mailto:danp@quantumcoating.com); Ian Stevenson, Director of Coating, [istevenson@quantumcoating.com](mailto:istevenson@quantumcoating.com).

## Quartus Engineering Incorporated

#1525

10251 Vista Sorrento Plwy Ste 250, San Diego, CA, 92121-3776  
+1 858 875 6000; fax +1 858 875 6001  
[jeff.frantz@quartus.com](mailto:jeff.frantz@quartus.com); [www.quartus.com](http://www.quartus.com)

## Quebec Photonic Network

#3617

111 rue Lapierre, LaSalle, QC, Canada, H8N 2J4  
+1 514 368 1677; fax +1 514 368 2098  
[francoiselee@photoniquequebec.ca](mailto:francoiselee@photoniquequebec.ca);  
[www.photoniquequebec.ca](http://www.photoniquequebec.ca)

**Featured Product: Business Development Services.**

Quebec Photonic Network is a Non profit organization whose mission is to accelerate the economic development of the Photonic Industry in the Province of Quebec, Canada. Contact: Michel Têtu, President and CEO, [michel.tetu@photoniquequebec.ca](mailto:michel.tetu@photoniquequebec.ca); Françoise Lee, Responsible for membership, [francoiselee@hotoniquequebec.ca](mailto:francoiselee@hotoniquequebec.ca).

## QWIP Technologies Inc.

#1111

499 Nibus St, Brea, CA, 92821  
+1 714 529 7947; fax +1 714 529 7946  
[ahong@qwip.com](mailto:ahong@qwip.com); [www.qwip.com](http://www.qwip.com)

QWIP Technologies uses Quantum Well Infrared Photodetectors to produce QWIP-Chip TM Focal Plane Arrays. These FPAs excel in both commercial and military applications requiring long wavelength operation, large formats, exceptional image quality and the utmost in thermal sensitivity. QWIP Technologies holds a worldwide exclusive license (granted by the California Institute of Technology) for the technology of bound-to-quasibound QWIP detectors. Contact: Alex Wong, Vice President, [ahong@qwip.com](mailto:ahong@qwip.com); Diane Kemberling, Consultant, [dkemberling@qwip.com](mailto:dkemberling@qwip.com).

### GENERAL REFRESHMENT SPONSOR

## Rainbow Research Optics, Inc.

#401

SPIE Corporate Member

6830 S Dawson Cir, Centennial, CO, 80112  
+1 303 371 3000; fax +1 303 371 1333  
[sales@rroptics.com](mailto:sales@rroptics.com); [www.rainbowoptics.com](http://www.rainbowoptics.com)

Rainbow Research Optics, Inc. is an optics manufacturing and coating company located in Centennial, Colorado. We offer precision optics with fast deliveries and competitive pricing. Our products range from UV to LWIR and sizes range from 3mm to 20inch. We offer prototype to high volume quantities. ITAR Compliant. ISO and SBD Certified. Contact: Hollie Marinecz, Sales Manager, [h.marinecz@rroptics.com](mailto:h.marinecz@rroptics.com); Mike Pagano, Sales Engineer, [m.pagano@rroptics.com](mailto:m.pagano@rroptics.com).



## RAL Space

SPIE Corporate Member

#332

Rutherford Appleton Laboratory, Harwell Science and Innovation Campus, Didcot, United Kingdom, OX11 0QX  
+44 1235 44 5000  
enquiries@stfc.ac.uk; www.stfc.ac.uk

**Featured Product: New developments for laser heterodyning, atom interferometry and millimeter wave technologies.**

With over 200 instruments in orbit and sent to the far reaches of the solar system, RAL Space is at the very forefront of UK space research whilst also contributing knowledge to terrestrial technology domains. We cover a wide range of science and technology disciplines: astronomy; solar, planetary & fundamental physics; earth observation; atmospheric chemistry; radio propagation; detector systems (from terahertz to gamma); design & engineering (thermal, mechanical, electrical & optical). Contact: Chris Bee, Business Development Manager, chris.bee@stfc.ac.uk; Edwin East, Business Development Manager, edwin.east@stfc.ac.uk.

## Raptor Photonics Ltd.

SPIE Corporate Member

#1517

Willowbank Business Park, Lame Northern Ireland, United Kingdom, BT40 2SF  
+44 2828 270 141  
info@raptorphotonics.com; www.raptorphotonics.com

**Featured Product: HAWK: rugged EMCCD camera, OWL: SWIR camera, KITE & FALCON: EMCCD camera.**

Raptor Photonics Ltd offers a full line of high performance, rugged ultra low light cameras, which are optimized for day/night surveillance, homeland security and scientific applications. Raptor specializes in complete cameras and core engine solutions using EMCCD, CMOS and SWIR sensor technology. The extreme low light capability of Raptor's cameras makes them ideal in a variety of applications, including Border & Coastal Surveillance, Airport & Port Surveillance and Airborne/Land EO systems. Contact: Sales & Marketing Team, sales@raptorphotonics.com.

METER BOARD SPONSOR

## Raytheon Company

SPIE Corporate Member

#3213

6380 Hollister Ave SB/H4/24, Goleta, CA, 93013  
+1 805 879 2284; fax +1 805 879 2287  
www.raytheon.com

**Featured Product: Short Wave Infrared (SWIR).**

RAYTHEON VISION SYSTEMS – For over a half century, Raytheon Vision Systems (RVS) products and innovations have probed the deepest recesses of space, defended US and friendly nations from harm, and provided our customers with the advantages necessary to successfully complete their mission and return safely. Contact: RVS Business Development, rvsmarketing@raytheon.com.



CONFERENCE BAG AND CONFERENCE BAG INSERT SPONSOR

## Raytheon ELCAN Optical Technologies

SPIE Corporate Member

#3213

Global Headquarters, 450 Leitz Rd, Midland, ON, Canada, L4R 5B8  
+1 705 526 5401; fax +1 705 526 5831  
info@elcan.com; www.elcan.com

**Featured Product: High Performance Optical Design and Precision EO systems assembly capabilities.**

Raytheon ELCAN supplies major defense contractors in North America and Europe with a complete range of precision electro-optical systems for security platforms. Along with Raytheon ELCAN is showcasing the newest in VPH spectrometers for homeland security applications by P&P Optica. When no one else can imagine it, design it or build it; ELCAN. Contact: Ricky Freeman, Regional Sales Manager, S.E. USA, r-freeman@raytheon.com; Wolf Glage, Vice President, Engineering, wglage@elcan.com. Raytheon ELCAN operates facilities in Midland, Ontario Canada and Richardson, Texas USA.

## RDECOM-AMRDEC

#3019

5400 Fowler Road, ATTN: RDMR-TM-SD, Redstone Arsenal, AL, 35898  
+1 256 842 9959

Command's (RDECOM) Aviation & Missile Research, Development & Engineering Center's (AMRDEC) Hardware-In-The-loop (HWIL) Simulation Division operates the Advanced Simulation Center, providing imaging infrared, laser, and radio frequency HWIL simulation support to missile developers. Missile guidance & control hardware is exercised in real time simulated flight, where missile sensors are provided with realistic signals.

## Renishaw Inc.

#309

5277 Trillium Blvd, Hoffman Estates, IL, 60192  
+1 847 286 9953; fax +1 847 286 9974  
usa@renishaw.com; www.renishaw.com

**Featured Product: Renishaw's RoLin-a component level linear/rotary sensor, with high resolutions, and small footprint.**

High-Performance Encoders for Industry's Toughest Applications. Renishaw offers a comprehensive range of encoders used by OEMs globally for exact positioning, reliability, and superior performance-to-cost value. Three encoder technologies — optical, magnetic and laser interferometer, provide designers with proven solutions to difficult applications. All are engineered to deliver non-contact, friction-free operation, exceptional ease of installation, space savings, and application flexibility. Contact: Howard Salt, Business Manager-Encoder Systems, howard.salt@renishaw.com; Eirik Scott, Regional Manager, eirik.scott@renishaw.com.

## RepExact, LLC

#1217

1112 Heatherloch Dr, Gastonia, NC, 28054  
+1 980 329 1688; fax +1 202 449 1381  
info@repexact.com; www.repexact.com

**Featured Product: Small mechanical components that meet the highest requirements in demanding applications.**

RepExact represents top-quality custom small and/or precise component manufacturers. Its principals perform precision machining of plastics, laser and mechanical processing of thin-wall metal microtubing, and complex single-operation CNC turning/machining. The company also works as a "free detective agency" to source almost any challenging component. Send us your no-quotes! Contact: Larry Kaufmann, President, kaufmar@repexact.com.

### Symposium-Wide Plenary Presentation

Open to All Attendees

Exhibition visitors, exhibitors, and technical conference attendees



#### Dr. Regina E. Dugan

Director, Defense Advanced Research Projects Agency (DARPA)

Tuesday 26 April · 8:30 to 9:30 am  
Crystal H, See page 16 for details



## Research Electro-Optics, Inc. #916

SPIE Corporate Member

5505 Airport Blvd, Boulder, CO, 80301  
+1 303 245 4306; fax +1 303 447 3279  
sales@reoinc.com; www.reoinc.com

REO is a mid to high volume US manufacturer of ultra-precision optical products in the visible, mid & long-wave IR. Applications include target designators, rangefinders, IRCM, RLG, FLIR systems & directed energy weapons systems. We specialize in demanding thin film coatings, high LDT & multispectral operation. We fabricate a wide range of plano, spherical, aspheric, cylindrical & prismatic optics, offering particular expertise in high performance, cost-effective opto-mechanical assemblies. Contact: Mark Damery, VP and General Manager of Global Sales, markd@reoinc.com; Ed Yousse, Director of Sales, edy@reoinc.com.

## Reynard Corp. #1330

SPIE Corporate Member

1020 Calle Sombra, San Clemente, CA, 92673  
+1 949 366 8866; fax +1 949 498 9528  
sales@reynardcorp.com; www.reynardcorp.com

**Featured Product: Custom miniature designed infrared variable spectral bandpass filters.**

Reynard supplies custom and standard optical components & thin film coatings 0.2µm to 50µm (UV-FAR IR) to demanding specs for military, aerospace, medical & telecom applications. Our expertise in these markets enables us to stay on the leading edge of technological advancements through research partnerships, commercial development programs, SBIR programs and internal R&D. Other services include Optical & Mechanical Fabrication, Photolithography Patterns, Environmental Testing, & Sub-Assembly. Contact: Sales Department, sales@reynardcorp.com.

## RICOR - Cryogenic & Vacuum Systems #1122

Ein Harod Ihud, Ein Harod Ihud, Israel, 18960  
+972 4 6530800; fax +972 4 6532424  
info@ricor.com; www.ricor.com

RICOR is a world leader in the development and manufacturing miniature Stirling Cryogenic Coolers, with primary focus at IR detectors of numerous Electro Optic applications. Our cryocoolers are renowned for their extreme reliability in critical aerial, naval and ground military missions along with space and civilian applications. The Centre of Excellence in Dynamics at RICOR provides solutions to acoustic, vibration and heat sinking problems for Electro Optic and Industrial applications. Contact: Yoav Zur, Marketing Manager, marketing@ricor.com; Avishai Filis, Marketing & Engineering Project Manager, avishai-f@ricor.com.

## Riegl USA, Inc. #510

7035 Grand National Dr Ste 100, Orlando, FL, 32819  
+1 407 248 9927; fax +1 407 248 2636  
info@rieglusa.com; www.riegusa.com

**Featured Product: Riegl USA is proud to announce two new systems. The VMX-250 and the LMS-Q680i.**

Riegl USA is a 17 year old, LiDAR Resource Facility for North America. We are a distributor of Riegl GmbH Systems, based in Horn, Austria. Riegl GmbH has 32 years experience in the research, development and manufacture of time-of-flight based optical radar systems. Our products are used for tripod, airborne survey, industrial process control, altimetry, aerospace, mobile, hydrographic and bathymetric applications. Contact: James Van Rens, President, jvanrens@rieglusa.com.

## Rochester Institute of Technology #3014

54 Lomb Memorial Dr, Rochester, NY, 14623  
+1 585 475 5294; fax +1 585 475 5988  
richardson@cis.rit.edu; www.cis.rit.edu

**Featured Product: Remote sensing academic research and education.**

RIT's Digital Imaging and Remote Sensing Laboratory is a leading academic research and educational entity. Research is focused on the exploitation of multi-modal image data (including spatial, spectral, polarimetric, and radar) and the development of a state-of-the-art radiometric simulation package called DIRSIG. DIRS Laboratory includes 9 faculty, 16 research staff, and over 30 graduate students. Contact: Michael Richardson, Researcher, richardson@cis.rit.edu; Donald McKeown, Researcher, mckeown@cis.rit.edu.

## Rochester Precision Optics LLC #210

SPIE Corporate Member

850 John St, West Henrietta, NY, 14586  
+1 585 292 5450  
sales@rpoptics.com; www.rpoptics.com

**Featured Product: Optical Assemblies – Eye Piece and objectives utilizing molded glass and machined aspheric optics.**

Manufacturer of precision molded glass aspherical lenses and optical assemblies. Highest performance light weight, compact eyepieces, integrated displays and objectives for night vision, thermal imaging and visible applications. Vertically integrated manufacturing, prototype and high volume. The latest automated optical manufacturing, diamond turning, advanced thin film coating and precision machine centers based on 25 years of development and production experience at Kodak Optical Imaging. Contact: Edward Patton, Director Sales and Marketing, epatton@rpoptics.com; Matt Pembroke, Sales, mpembroke@rpoptics.com.



GENERAL REFRESHMENT SPONSOR

## Rocky Mountain Instrument #733

SPIE Corporate Member

106 Laser Dr, Lafayette, CO, 80026  
+1 303 664 5000; fax +1 303 664 5001  
sales@rmico.com; www.rmico.com

RMI is a leading manufacturer of UV to IR optical components, high-power thin film coatings, and optical assemblies. Contact: Jensen Huddleston, Marketing Manager, jensenh@rmilaser.net; Heath Kirin, Sales Manager, heath@rmico.com.

## Rotem Industries #1136

Rotem Industrial Park, Beer-Sheva, Israel, 84190  
+972 8 6579781; fax +972 8 6573186  
oren@rotemi.co.il; www.rotemi.co.il/crystals

**Featured Product: Unique top quality sapphire domes and windows for Defense and Optics applications.**

Rotem Industries' Crystals Division is a well-known international player, producing sapphire domes and windows for Defense & Optics applications. Pioneered the use of a sapphire dome for missiles more than 30 years ago; Rotem continues to precede the industry creating new technological breakthroughs by exposing the sensational hyper-hemispherical sapphire dome which expands the imagination in the world of Optics. Contact: Oren Leiberman, Crystals Division Marketing Manager, oren@rotemi.co.il; Benny Ballin, Head of the Crystals Division, BennyB@rotemi.co.il.

**RPC Photonics, Inc.**

#231

SPIE Corporate Member

330 Clay Rd, Rochester, NY, 14623  
+1 585 272 2840; fax +1 585 272 2845  
info@rpcphotonics.com; www.rpcphotonics.com

RPC Photonics Inc. designs & manufactures micro-optical components for illumination, displays, military, space and medical applications, LED & laser systems & semiconductors. Products include Engineered Diffusers™, beam shapers, microlens arrays & diffractive optical elements. RPC offers complete optical solutions from design to manufacturing of low-volume unique components or high-volume consumer optics in glass, polymer on glass, IR materials, injection or compression-molded polymers or films. Contact: Rose A. Peet, Contracts/Sales/Quality Manager, peet@RPCphotonics.com; Cheryl Walker, Office Administrator, walker@RPCphotonics.com.

**RPMC**

#1218

SPIE Corporate Member

203 Joseph St, O'Fallon, MO, 63366  
+1 636 272 7227; fax +1 636 272 3909  
www.rpmclasers.com

**Featured Product: Arete TID and Amplified TID, mil-spec DPSS Lasers.**

RPMC Lasers, Inc. is a distributor of lasers and laser diodes. We offer a wide range of solid state lasers, including femtosecond, picosecond, nanosecond, microsecond, millisecond and CW DPSS/lamp pumped lasers as well as pulsed and CW fiber lasers. We also offer single mode & multimode laser diodes, free space and fiber coupled, drivers, controllers, heat sinks and even turnkey systems. Custom products are offered. Contact: Sidney Wright, DPSS Business Development Manager, Sidney@rpmclasers.com; Chuck Ratermann, President, Chuck@rpmclasers.com.

**Rubicon Technology, Inc.**

#1216

SPIE Corporate Member

900 Green St, Bensenville, IL, 60106  
+1 847 295 7000; fax +1 847 295 7555  
sales@rubicon-es2.com; www.rubicon-es2.com

Rubicon Technology, Inc. is a vertically-integrated manufacture and an advanced electronic materials provider that is engaged in developing, manufacturing and selling monocrystalline sapphire for LEDs, RFICs, blue laser diodes, optoelectronics and other optical applications. We apply its proprietary crystal growth technology and fabrication process to produce very high-quality sapphire in various sizes and orientations of substrates and windows specified by its customers in volume production. Contact: Dr. Elena Dobrovinskaya, Chief Scientist, edobrovinskaya@rubicon-es2.com; Miyuki Calvert, Account Manager, mcalvert@rubicon-es2.com.

**SAES Getters USA, Inc.**

#412

1122 E Cheyenne Mtn Blvd, Colorado Springs, CO, 80906  
+1 719 576 3200; fax +1 719 576 5025  
page@saes-group.com; www.saesgetters.com

**Featured Product: ST 171, ST 172 & ST 175 porous getters and SAES' thin film Page material.**

As a strategic supplier of technology innovation for the defense and sensing industry, SAES Getters provides products that allow customers to achieve lifetime vacuum integrity of their detectors and sensors. There are many configurations of getter solutions available for integration inside a device ranging from larger porous getters utilizing ST 171, ST 172, ST 175, or other varieties of getter alloys to SAES' thin film Page material. Contact: Heather Florence, Applications Engineer, haf@saes-group.com; Marco Moraja, Business Manager, marco\_moraja@saes-group.com.

**Sandia National Laboratories**

#1322

1515 Eubank SE, Albuquerque, NM, 87123  
+1 800 417 2634; fax +1 505 844 6735  
cwsumpt@sandia.gov; http://www.sandia.gov/mstc

**Featured Product: Trusted Research and Development.**

Sandia National Laboratories Microsystems Center develops microsystems and their constituent components including electronic devices, MEMS, optoelectronic and photonic integrated circuits, sensors, and sensed systems. The center is also a DMEA accredited Category 1A trusted supplier for both ASIC design and foundry services. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company. Contact: Carol Sumpter, Technical Marketing Staff, cwsumpt@sandia.gov.

**Santa Barbara Infrared, Inc.**

#711

SPIE Corporate Member

30 S Calle Cesar Chavez Ste D, Santa Barbara, CA, 93103  
+1 805 965 3669; fax +1 805 963 3858  
sales@sbir.com; www.sbir.com

SBIR designs and manufactures the most innovative IR and E-O test instrumentation available. Our products offer the highest level of performance and are designed for laboratory, production, depot and field testing environments. Products include: blackbody sources, visible sources, laser test sets, collimators, target projectors, spectral radiometer, test automation software, multi-spectral test sets, detector test sets and MIRAGE dynamic IR scene projectors. Contact: Steve White, Sales Manager, swhite@sbir.com; Gabe Amparan, Sales & Customer Service, gamparan@sbir.com.

**Sarnoff Corp.**

#1101

*see SRI International Sarnoff***Savvy Optics Corp.**

#105

SPIE Corporate Member

35 Gilbert Hill Rd, Chester, CT, 06412  
+1 860 878 0722  
sales@savvyoptics.com; www.savvyoptics.com

**Featured Product: The SavvyInspector SIF4 scratch and dig metrology tool takes the subjectivity out of surface quality.**

Founded in 2007, Savvy Optics Corp is an optical engineering and design company dedicated to practical solutions to optical problems. In addition to optical design, fabrication and metrology consulting, Savvy Optics Corp provides metrology tools and on-site training and education for scratch and dig, texture, and ISO 10110 specifications. Contact: Dave Aikens, President, sales@savvyoptics.com.



POPCORN STATION SPONSOR

**SCD.USA, LLC**

#611

SPIE Corporate Member

1901 S Harbor City Blvd #806, Melbourne, FL, 32901  
+1 321 724 6146; fax +1 321 724 6267  
contactus@scdusa.com; www.scdusa.com

**SPIE**  
**Digital**  
**Library** Find the answer  
SPIDigitalLibrary.org

## Schneider Optics, Inc.

SPIE Corporate Member

285 Oser Ave, Hauppauge, NY, 11788  
+1 631 761 5000; fax +1 631 761 5090  
www.schneideroptics.com

**Featured Product: Schneider Optics makes robust Compact C-Mount lenses used in environments where stability is critical.**

Schneider Optics manufactures high performance lenses for machine vision, robotics, document scanning, metrology, military, surveillance, & other applications. Standard products include Compact C-Mount, F-Mount, Telecentric, Macro, large format lenses (area & line scan), & 3CCD lenses and industrial filters. Custom lens solutions are also available. Key markets include Machine Vision, Robotics, Document Scanning, Industrial Inspection, 2D/3D Metrology, Surveillance, & SWIR/Hyperspectral Imaging. Contact: Jim Sullivan, Director of Sales & Marketing, Industrial Optics, jsullivan@schneideroptics.com; Stuart Singer, Vice President, ssinger@schneideroptics.com.

#301

## Sensors Unlimited-Goodrich ISR Systems #723

SPIE Corporate Member

3490 US Rte 1 - Bldg 12, Princeton, NJ, 08540-5914  
+1 609 520 0610; fax +1 609 520 1663  
sui\_info@goodrich.com; www.sensorsinc.com

**Featured Product: Goodrich's New, 1.3Mpixel 15µm-Pitch High-Resolution InGaAs NIR-SWIR Camera.**

Goodrich ISR Systems is a global leader in the design and manufacture of advanced, mission critical defense and space systems for intelligence, surveillance and reconnaissance solutions. Our products include precision optics, electronics and software, stabilized camera gimbals, micro gimbals and flight management systems from Cloud Cap Technology, long-range electro-optical/infrared (EO/IR) & indium gallium arsenide (InGaAs) short wave infrared (SWIR) sensors, cameras, and systems. Contact: Karen Jeffers, Marketing Communications Specialist, karen.jeffers@goodrich.com; Bob Struthers, Director, Sales & Marketing, robert.struthers@goodrich.com.

## SCHOTT North America, Inc. - Defense #511

SPIE Corporate Member

2451 Crystal Dr Ste 450, Arlington, VA, 22202  
+1 703 418 1409; fax +1 703 418 4762

defense@us.schott.com; www.us.schott.com/defense

For over 40 years, SCHOTT has delivered a wide range of leading edge glass and glass-ceramic solutions for defense and security applications. SCHOTT's optics, fiber optic, armor material and electronic packaging products are being used in the field today to keep soldiers safe and to improve their effectiveness. SCHOTT stronger. SCHOTT safer. SCHOTT smarter. Contact: Marlene Deily, Marketing Manager, marlene.deily@us.schott.com; Katie MacIntyre, Defense Marketing & PR Manager, defense@us.schott.com.

#511

## Sentient Vision Systems PTY Ltd. #1238

26/3 Westside Ave, Port Melbourne, VIC, Australia, 3207  
+61 3 96 46 3331; fax +61 3 96 46 8231  
www.sentientvision.com

**Featured Product: Kestrel is an Automated Target Detection software for full motion video.**

Sentient develops and deploys computer vision technology for defense and civil projects. Since 1999 we have been specializing in video analytics with a strong focus on the development of automated target detection software. Sentient is a member of the Defence Recognized Supplier Scheme and a trusted partner of the Australian Department of Defence. For more information, visit www.sentientvision.com. Contact: Simon Olsen, Sales Manager, simono@sentientvision.com; Jason Beasleigh, Defence Sales Executive, jasonb@sentientvision.com.

## Scintec Corporation

SPIE Corporate Member

5950 Shiloh Rd E Ste S, Alpharetta, GA, 30005  
+1 770 887 0557; fax +1 770 887 7849  
sales@scintec.com; www.scintec.com

**Featured Product: BLS and SLS Scintillometers for Optical Turbulence Characterization and Data Analysis.**

Scintec is a developer and manufacturer of ground-based remote sensing systems using optical and acoustic technology. Innovative product design and outstanding quality has made Scintec a global leader in this field. Scintec produces the most advanced and comprehensive wind, temperature and turbulence profilers in SODAR, RASS and Scintillometer technology. Customers include research institutes and universities, the military, major airports and weather services worldwide. Contact: Todd Reed, todd.reed@scintec.com.

#3108

## SET - Smart Equipment Technology S.A.S.#1041

131 Impasse Barteudet, Saint-Jeoire, France, 74490  
+33 450358392; fax +33 450358801  
egreneche@set-sas.fr; www.set-sas.fr

Founded in 1975, SET - Smart Equipment Technology - based in France, is a world leading supplier of High Accuracy Die-to-Die and Die-to-Wafer Bonders and NIL solutions. With more than 300 systems installed worldwide, SET is globally renowned for the unsurpassed accuracy and the flexibility of its flip chip bonders. SET encompasses a subsidiary in North America and serving clients through a global network of representatives and in-depth customer trainings. Contact: Gilbert Lecarpentier, International Product Manager, glecarpentier@set-sas.fr; Emmanuelle Grenèche, Marcom Service, egreneche@set-sas.fr.

## SELEX Galileo Ltd.

Christopher Martin Rd, Basildon Essex,  
United Kingdom, SS14 3EL  
+44 780 1717039  
www.selexgalileo.com

SELEX Galileo, a Finmeccanica company, provides a full security, safety and ISTAR capability for air, land and sea operations. The Company combines leading edge technologies to deliver integrated sensor solutions to enhance Situational Awareness, Surveillance and Protection and offers through-life management for defense systems and home security applications. SELEX Galileo employs 7,000 people with operations in the United Kingdom, Italy, United States and Saudi Arabia. Contact: David Bishton, Head of IS2 Sales and Marketing, david.bishton@selexgalileo.com; Sarah Marcham, Sales and Marketing Manager, sarah.marcham@selexgalileo.com.

#3502

## Shellcast Foundries Inc. #1400

10645 Lamoureux Street, Montreal-Nord, Canada, H1G 5L4  
+1 514 322 3760; fax +1 514 322 7226  
techsales@shellcast.com; http://www.shellcast.com/

**Featured Product: Aluminum investment casting manufacturer for Military, Defense, Aerospace, Satellite, High-Tech Industry.**

AS9100, ISO9001 and NADCAP certified. All casting processes are performed in-house. This includes a non-destructive test lab (NDT) for X-Ray and Penetrant inspection, a destructive test lab, a chemical test lab with arc emission spectrometer, heat treatment facility and CMM equipment. Shellcast offers RAPID PROTOTYPE castings to accommodate sample requirements without the need of hard tooling for functional verifications of new designs as well as fully machined and finished "turnkey" products. Contact: Joe Khouzam, Marketing Director, joek@shellcast.com; Bruce Neal, Shellcast Sales, bneal@tsafl.com.



**PROMOTIONAL PARTNER****Shephard Group****#112**

268 Bath Rd, Slough Berkshire, United Kingdom, SL1 4DX  
+44 1753 727025  
ajd@shephard.co.uk; www.shephard.co.uk

**Sierra Precision Optics****#110**

12830 Earhart Ave, Auburn, CA, 95602  
+1 530 885 6979; fax +1 530 885 1037  
jstimpson@sierraoptics.com;

Flatwork: Plano optics (Filters, Panels, Windows, Mirrors, Beam Splitters, Wedges and Prisms), Spherical and Cylindrical Lenses. Specialties: Cylindrical optics, Excimer laser components, UV/VIS/NIR Resonator optics, Flow Tubes and Custom shaped optics, 1/20th wave optical grade metal polishing of Invar and stainless steel. Contact: Jim Stimpson, V. P. Sales & Marketing, jstimpson@sierraoptics.com; Steve Bennion, Engineering Manager, sbennion@sierraoptics.com.

**Simphotek Inc.****#1507**

**SPIE** Corporate Member

211 Warren St Ste 202, Newark, NJ, 07103-3568  
+1 973 621 2340  
info@simphotek.com; www.simphotek.com

**Featured Product: SimphoSOFT CAD-based software simulates laser beam propagation through complex nonlinear materials.**

Simphotek offers CAD-based software for modeling photonic interactions in materials and devices. Novel CAD features allow the user to input material energy level diagrams of arbitrary complexity. The corresponding numerical simulation code is generated automatically behind the scenes. The simulated properties can include multi-photon absorption, relaxation, stimulated emission, transmission, Kerr, diffraction, pulse shape, dynamics of electronic populations, energy transfer and upconversion. Contact: Karl Beeson, VP Technology, info@simphotek.com.

**Sinclair Manufacturing Company****#3405**

PO Box 398, Chartley, MA, 02712-0398  
+1 508 222 7440; fax +1 508 226 0517  
sales@sinclairmfg.com; www.sinclairmfg.com

**Smart Material Corp.****#3819**

**SPIE** Corporate Member

1990 Main St Ste 750, Sarasota, FL, 34236  
+1 941 870 3337  
info@smart-material.com; www.smart-material.com

**Featured Product: Vibration Energy Harvesting Piezo composite Sensors and Actuators Structural morphing for UAVs.**

Smart Material Corp. is developing and manufacturing advanced piezo composite devices and related systems. Our products are used in aerospace, for energy harvesting from vibrations, for sensing, as actuators and structural health monitoring applications. Contact: Thomas Daue, t.daue@smart-material.com; Madeleine Daue, m.daue@smart-material.com.

## Plan to Attend FREE Product Demonstrations

Refer to pages 24–25 for schedule and location.

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# Exhibitor Directory

## Smiths Detection

#637

21 Commerce Dr, Danbury, CT, 06810  
+1 203 207 9700; fax +1 203 207 9780  
gmer.americas@smithsdetection.com;  
www.smithsdetection.com

**Featured Product: HazMatID 360: rugged, portable FT-IR chemical identifier with classification tools.**

Smiths Detection leads the global military and emergency response marketplace with specialized chemical, biological, radiological, nuclear and explosive (CBRNE) detection and protection solutions. Contact: Mitch Friedman, Sales Engineer, mitch.friedman@smithsdetection.com; Andrew Edwards, Marketing Coordinator, andrew.edwards@smithsdetection.com.

## SOFRADIR

#503

43-47 Rue Camille Pelletan, Chatenay Malabry, France, 92290  
+33 1 41 13 45 35; fax +33 1 46 61 58 84  
www.sofradir.com

**Featured Product: Come to our booth to see Scorpio LW (640x512 15µm pitch LWIR) and Altair (640x512 bicolor).**

Sofradir is the No. 1 supplier in Europe for 2nd and 3rd generation IR MCT detectors and the No. 2 ranking worldwide. Sofradir and its subsidiaries, ULIS and Sofradir EC, employ 500 people. Sofradir's detectors have been integrated in battlefield proven equipments as well as in space observation missions. They include linear arrays and staring arrays, from ultracompact and low power Epsilon (384x288 15µm pitch) to JUPITER (1280x1024 15µm pitch). Contact: Marc Larive, Marketing Manager, marc.larive@sofradir.com; Michel Dazy, VP Sales & Marketing, michel.dazy@sofradir.com.

## Sofradir EC, Inc.

#503

373 Rte 46 W, Fairfield, NJ, 07004  
+1 973 882 0211; fax +1 973 882 0997  
info@sofradir-ec.com; www.sofradir-ec.com

The Sofradir EC product line includes cooled and uncooled infrared imaging detectors, engines and subsystems for government, commercial and R&D applications. The products are available for SW, MW, LW and VLW infrared imaging in small, medium, and large array formats. In addition, the company's Electrophysics product line includes AstroScope night vision modules, infrared research cameras and viewers as well as Hotshot handheld thermal imagers for IR inspection. Contact: Chris Alicandro, Vice President of Sales, info@sofradir-ec.com.

## Solid Sealing Technology

#1235

44 Dalliba Ave, Watervliet, NY, 12189  
+1 518 874 3604; fax +1 518 874 3610  
info@solidsealing.com; www.solidsealing.com

**Featured Product: Electrical and Optical ceramic and glass ceramic to metal feedthroughs and connectors.**

Solid Sealing Technology specializes in the design and manufacture of hermetic products using ceramic and glass ceramic to metal sealing, metalizing, brazing, and welding. Products include: Hermetic Feedthroughs, Connectors and Optic Components. SST manufactures standard and custom products for high temperature and pressure, and ultra-high vacuum. SST markets include: Defense, Sensors, Telecommunications, Medical, Semiconductor Equipment, Homeland Security, and High Energy Physics. Contact: Don Walzer, Sales Manager, dwalzer@solidsealing.com; Alan Fuierer, afuierer@solidsealing.com.

## Solid State Cooling Systems

#3412

167 Myers Corners Road, Wappingers Falls, NY, 12590  
+1 845 296 1300; fax +1 845 296 1303  
info1@sscooling.com; www.sscooling.com

**Featured Product: ThermoRack 1000W PAO chiller. ThermoRack 800W chiller for laser and lab. Energy efficient and Reliable.**

Our family of products (chillers, heat exchangers, power supplies and cold plates) provide precise temperature control for drone lasers, ground test support, diode lasers, IGBT cooling, guidance systems, analytical labs, SEM's, cool jackets and portable cooling. Our systems can also manage a variety of fluids: PAO, Water, Water/Glycol, Fluorinert, HFE Galden and others. Contact: Steve Huchro, Director of Sales, shuchro@sscooling.com; Mark Logan, Ph.D., VP of Sales, mlogan@sscooling.com.

## Solid State Scientific Corp.

#716

27-2 Wright Rd, Hollis, NH, 03049  
+1 603 598 1194; fax +1 603 598 1197  
www.solidstatescientific.com

SSSC designs and develops spectral-temporal sensors and high-throughput hyperspectral imagers from the visible through the LWIR infrared, including a real time MWIR 4 color multi-spectral imager and a real time VNIR 16 color multi-spectral imager on display at our booth #716. As a leader in spectral sensing technologies, we combine phenomenology, hardware and software engineering to create innovative and comprehensive spectral sensors from concept to prototype, and from source to data product. Contact: Linda Bouthillette, Contract Administrator, linda@solidstatescientific.com.



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## Sony Electronics Inc.

#3402

1 Sony Dr, Park Ridge, NJ, 07656  
+1 201 930 1000  
www.sony.com/gjige

**Featured Product: Sony High-Quality Industrial Cameras for Security Applications.**

Sony Visual Imaging Products, a renowned leader in camera technology, will be demonstrating its new Color GigE Cameras and its latest HD Block & E Series Cameras. Sony will also be displaying its new XCD-MV6 1394.b camera, ultra-compact XC-505 and Smart Cameras. Contact: Drew Buttress, Product Manager, andrew.buttress@am.sony.com; George Minakas, Product Manager, george.minakas@am.sony.com.

## Souriau PA&E

#1314

434 Olds Station Road, Wenatchee, WA, 98801  
+1 509 667 5480; fax +1 509 663 5039  
Rkalkowski@pacaero.com; www.pacaero.com

**Featured Product: Turnkey Hermetic Electronic Packaging and Integrated Connectors for Harsh Environment Applications.**

SOURIAU PA&E is a custom manufacturer of hermetic electronic packaging, connectors and EMI filters for harsh environment applications. The company uses unique materials and processes to help engineers optimize their component designs for light weight, thermal conductivity, CTE or other key performance characteristics. Visit us in booth 1314 – our engineers will be on hand to discuss your hermetic connector and packaging challenges and provide insight into our innovative solutions. Contact: Rick Kalkowski, Marketing Manager, rkalkowski@pacaero.com.

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

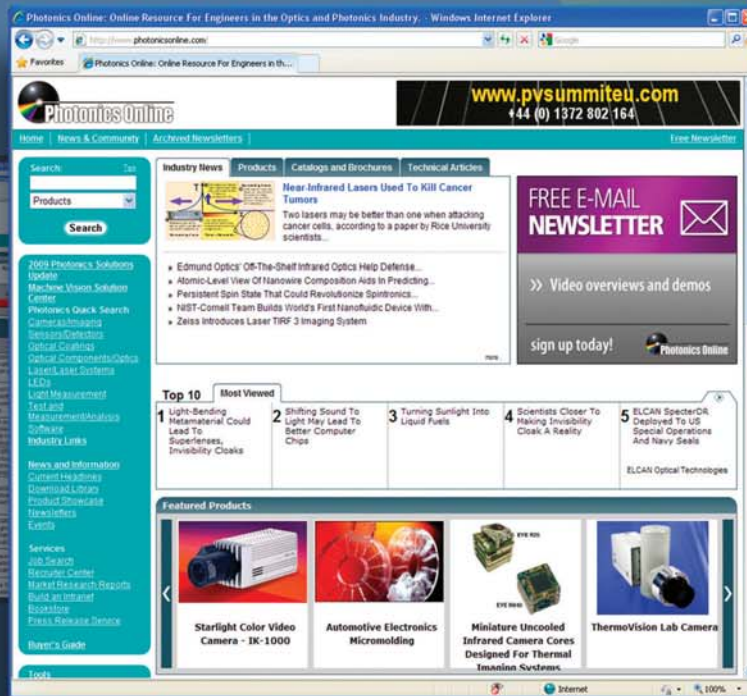
See course listing on pages 20– 22.



# Photonic Online

## Where the future of photonics is found

Photonic 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).



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# Exhibitor Directory

## Special Optics

#839

315 Richard Mine Rd, Wharton, NJ, 07885  
+1 973 366 7289; fax +1 973 366 7407  
sales@specialoptics.com; www.specialoptics.com

Special Optics specializes in rapidly designing, prototyping, and manufacturing the most innovative and highest performing custom optical systems. We provide state-of-the-art optical solutions that are typically found in applications that demand the finest optical surfaces, highest accuracy and tightest tolerances. In addition to our custom solutions, we carry a complete line of standard "off-the-shelf" products, like Scan Lenses and Beam Expanders all available for quick delivery. Contact: Craig Fitzgerald, VP Product and Business Development, c\_fitzgerald@navitar.com; Chuck Rafoth, VP Product and Business Development, c\_rafoth@navitar.com.

## Specim Spectral Imaging Ltd.

#1133

**SPIE** Corporate Member

Teknologiantie 18 A, Oulu, Finland, 90590  
+358 1 04244400; fax +358 0 8388580  
info@specim.fi; www.specim.com

SPECIM Spectral Imaging Ltd. is the world's leading manufacturer of hyperspectral imaging instruments and systems. In addition to airborne remote sensing systems, SPECIM provides ImSpector Imaging Spectrographs, Spectral Cameras and Hyperspectral Imaging Solutions to an increasing range of demanding industrial and science applications like colour measurement, process analytical technology (PAT), life sciences, chemical imaging and forensics. Contact: Ana Aranda, Marketing Coordinator, ana.aranda@specim.fi.

## Spectral Systems

#1440

35 Corporate Park Dr., Hopewell Junction, NY, 12533  
+1 845 896 2200; fax +1 845 896 2203  
jtaran@spectral-systems.com; www.spectral-systems.com

## Spectrogon US Inc.

#300

**SPIE** Corporate Member

24B Hill Rd, Parsippany, NJ, 07054  
+1 973 331 1191; fax +1 973 331 1373  
sales.us@spectrogonus.com; www.spectrogon.com

**Featured Product: Optical components featuring: Infrared filters.**

Spectrogon specializes in the design & manufacture of optical filters and coatings for the infrared and visible spectrums; holographic diffraction gratings for laser pulse, tuning and spectroscopic applications. Spectrogon offers a huge inventory of stock filters and pricing that can be viewed on our website: www.spectrogon.com. Contact: Steve Finn, Sales Manager, sales.us@spectrogon.com; Kelly Koerber, Sales Adm., sales.us@spectrogon.com.

## Spectrolab, Inc.

#3401

12500 Gladstone Ave, Sylmar, CA, 91342  
+1 818 365 4611  
www.spectrolab.com

**Featured Product: InGaAs APD Sensor Chip Assemblies, InGaAs APD GM-mode Camera.**

Spectrolab offers high performance and reliable sensor products for the infrared imaging and photon counting markets. We offer a variety of packaging options and all detectors can be packaged according to customer's specifications. We offer low-noise InGaAs APD arrays, 32 x 32 APD Geiger mode sensor chip assemblies and LADAR camera for active infrared imaging applications and low-noise InGaAs PIN arrays for night vision applications. We also offer custom design APD arrays and packages. Contact: Rengarajan Sudharsanan, Director for Sensor Products, rengarajan.sudharsanan@boeing.com; Dorothea S. Taylor, Marketing Engineering Coordinator Sr., dorothea.s.taylor@boeing.com.

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## Spectroscopy Magazine

#407

485 F US Highway 1 South Ste 100, Iselin, NJ, 08830  
+1 732 596 0276; fax +1 732 596 0003

The monthly print issue of Spectroscopy has been the gold standard that spectroscopists have looked to for objective, unbiased, nuts-and-bolts technical information they can use in their labs every day. In an age of ever-increasing advertorial and promotional content, Spectroscopy continues to bring readers technical advice from veteran industry experts in the areas of Raman, FT-IR, X-ray, ICP-MS, lasers and optics, chemometrics, software validation and compliance, and more. Contact: Ed Fantuzzi, Publisher, efantuzzi@advanstar.com; Stephanie Shaffer, Sales Representative, sshaffer@advanstar.com.

## Sperian Protection

#1305

10 Thurber Blvd, Smithfield, RI, 02917  
+1 800 500 4739; fax +1 401 232 1830  
information@sperian.com; www.sperian.com

## Spica Technologies, Inc.

#1031

**SPIE** Corporate Member

18 Clinton Dr #3, Hollis, NH, 03049  
+1 603 882 8233; fax +1 603 882 8614  
sales@spicatech.com; www.spicatech.com

Spica Technologies provides a broad range of optical test and measurement services for manufacturers and end users of optical components. Founded in 1989, Spica has evolved as the premier source for laser damage testing, optical density measurements, environmental exposure, and general optical component metrology. Relying on numerous laser sources, a host of specialized optical instruments, and years of experience, Spica can support a broad range of optical test and measurement needs. Contact: Michael Thomas, President, sales@spicatech.com.

## SPIE Career Center

#JF-1

1000 20th St, Bellingham, WA, 98225  
+1 360 715 3705  
jobsales@spie.org; http://spie.org/careercenter

Your source for optics and photonics jobs and talent. Recruit your next hire or find your next job on the SPIE Career Center. Job seekers can search job listings, set up email alerts, and view the 'Advice+Tools' section. Employers may post jobs and gain access to a resume database, create a Resume Alert, and participate in job fairs held at SPIE conferences. Contact: Sara Liebert, Sales, saral@spie.org; Robert Dentel, Sales, robertd@spie.org.

## Spire Semiconductor, LLC

#534

25 Sagamore Park Dr, Hudson, NH, 03051  
+1 603 595 8900; fax +1 603 595 0975  
sales@spiresemi.com; www.spiresemi.com

Spire Semiconductor is a leading provider of III-V and II-VI compound semi solutions. We offer design, development & manufacturing services for defense, telecommunication & biomedical markets. We have been able to develop an extensive technology library and foster breakthroughs such as a world record 42.3% efficient CPV cell technology. We offer close customer collaboration with our scientists & engineers to ensure guaranteed access to experience and a competitive edge in the marketplace.



## Free Popcorn

Palms and Cypress Exhibition Halls

Popcorn carts will be open Tuesday and Wednesday from 11:00 am to 3:00 pm; Thursday from 11:00 am to 2:00 pm.

**SRI International Sarnoff****#1101**

201 Washington Rd, Princeton, NJ, 08543  
+1 609 734 2553; fax +1 609 734 2040  
info@sarnoff.com; www.sarnoff.com

SRI Sarnoff delivers advanced capabilities for situational awareness including real-time video processing, multi-spectral image fusion and low-light CMOS imagers. Optimized for SWAP constrained applications these field-proven solutions leverage decades of experience in imaging and vision technologies to address next generation day/night vision systems such as goggles, weapons sights, manned/unmanned aerial and ground vehicles, border/perimeter protection, and security and surveillance platforms. Contact: Tom Vogelsong, info@sri.com.

**StingRay Optics, LLC****#504**

2nd Fl 310 Marlboro St, Keene, NH, 03431  
+1 603 358 5577; fax +1 603 358 5579  
info@stingrayoptics.com; www.stingrayoptics.com

**Featured Product: SuperBand Optic™ offers achromatic imaging from visible to far-infrared wavelengths.**

StingRay Optics offers optical and opto-mechanical design, product development and prototyping for custom optical systems including UV, Visible, NIR, SWIR, MWIR, and LWIR operating wavebands. Our highly experienced designers and engineers have developed numerous solutions such as: laboratory environments, field use, airborne & space based applications with designs for weight and air constrained UAV lenses, motorized multiple field of view thermal imaging systems and HWIL IR Scene Projectors. Contact: Shannon Larbig, Sales Engineer, shannon@stingrayoptics.com; Jennifer Myers, Sales and Marketing Manager, jmyers@stingrayoptics.com.

**Submillimeter - Wave Technology Laboratory - UMass Lowell****#925**

175 Cabot St Ste 130, Lowell, MA, 01720  
+1 978 934 1300; fax +1 978 452 3333  
http://stl.uml.edu

Since 1982, the Submillimeter-Wave Technology Laboratory (STL) at the University of Massachusetts Lowell has developed solid-state and laser-based terahertz sources along with high-sensitivity incoherent and coherent receivers. Using these technologies, STL researchers have engineered unique Compact Radar Ranges to acquire the radar signature of scaled tactical vehicles. Producing high fidelity radar imagery cost effectively, STL has pioneered terahertz radar modeling. Contact: Dr. Robert H. Giles, Director, Robert\_Giles@uml.edu; Dr. Andrew Gatesman, Assistant Director, Andrew\_Gatesman@uml.edu.

**Sumitomo Electric U.S.A., Inc.****#1135**

21241 S Western Avenue Suite 120, Torrance, CA, 90501  
+1 310 782 0227; fax +1 310 782 0211  
http://global-sei.com/products/energy/zns\_lens.html

Sumitomo Electric has released Far Infrared (10µm) Lenses made with zinc sulfide (ZnS), which can reduce mass production cost by mold forming process. ZnS Infrared Lens Modules are available for thermal imaging applications in automotive, industrial, security and surveillance markets. Sumitomo Electric is a global leader in advanced materials and manufacturing technologies and is pleased to showcase these in the Cypress Hall, booth #1135.

**Sydor Instruments LLC****#1423**

31 Jet View Dr, Rochester, NY, 14624  
+1 585 278 1168; fax +1 585 278 1169  
clanr@sydorinstruments.com; www.sydorinstruments.com

Sydor Instruments provides electro-optic instrumentation and ultrafast imaging systems for a variety of applications in aerospace and defense. We specialize in streak cameras, intensified camera systems, and single photon detectors that enable the highest resolution and accuracy necessary for high value optical signal detection, discrimination, and analysis. Contact: Dan Rao, Sales, danr@sydorinstruments.com; Michael Pavia, President, pavia@sydorinstruments.com.

**Syntec Optics****#226**

**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 of custom plastic optics in the US. With its headquarters located near Rochester, NY, one of the top leading optics clusters, Syntec provides optics solutions to the medical, defense and biometric industries. Visit www.syntecoptics.com to learn more. Contact: Rick Arndt, VP/GM, rarndt@syntecoptics.com; Doug Hand, Sales Manager, dhand@syntecoptics.com.

**Tamron Co, Ltd.****#1312**

1385 Hasunuma Omiya-shi, Saitama, Japan, 337-8556  
+81 48 684 9424; fax +81 48 683 8594  
www.tamron.co.jp

**Featured Product: Thermal Imaging Camera/Lens & 180 Degree Camera.**

Tamron-Manufacturer of precise and sophisticated optical products for a broad range of industries. Contact: Daisuke Naito, Sales, d-naito@tamron.co.jp.

**TDK-Lambda Americas Inc.****#3501**

405 Essex Rd, Neptune, NJ, 07753  
+1 732 922 9300; fax +1 732 922 1441  
sales@us.tdk-lambda.com; www.us.tdk-lambda.com/hp

**Featured Product: Genesys(TM) Programmable AC-DC Power Supplies 750W to 60kW.**

Genesys(TM) AC/DC power supplies provide high power density, low ripple and complete user-friendly interfaces. Outputs to 600V and 1,000A. Genesys(TM) series contains extensive features that provide excellent performance and flexibility in materials research laboratories and test systems. Users now have a complete family with identical features and interfaces from 750W to 15kW. Contact: John Breickner, Product Manager, john.breickner@us.tdk-lambda.com.

**tec5USA, Inc.****#3420**

**SPIE** Corporate Member  
80 Skyline Dr, Plainview, NY, 11803  
+1 516 653 2000; fax +1 516 939 0555  
info@tec5USA.com; www.tec5USA.com

**Featured Product: Ethernet spectrometer electronics with preprocessing, dark current, averaging, non-linearity correct.**

High-quality products for spectroscopy, light sources, light guides, fiber-optic switches and probes, spectrometer modules, operating electronics. (Multi-channel) spectrometer systems for multiple applications in lab or process, e.g. concentration, filter transmission, color, thin film thickness. Optical instrumentation as remote control biomass detection systems. Various software support. Custom designed components and systems. Contact: Gert Noll, General Manager, gert.noll@tec5usa.com; Dileep Mathew, Technical Support Components, dileep.mathew@tec5usa.com.

# Exhibitor Directory

## Techmetals, Inc.

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: Optakoat for SPDT and a wide variety of functional, engineered coatings for most metal substrates.**

TECHMETALS, Inc. has been "Enhancing the performance and Extending the Life" of our customers parts for over 40 years. For more information go to [www.techmetals.com](http://www.techmetals.com). Contact: Steve Deisher, GM - Optics Division, [sdeisher@techmetals.com](mailto:sdeisher@techmetals.com); Kenny Hindman, Metal Finishing Specialist, [sales@techmetals.com](mailto:sales@techmetals.com).

#633

## Technical Cable Concepts Inc.

#1511

350 Lear Ave, Costa Mesa, CA, 92626-6015  
+1 714 835 1081; fax +1 714 835 1595  
sales@techcable.com; www.techcable.com

**Featured Product: Custom Military Cable Assemblies.**

Technical Cable Concepts, Inc. (TCC), is a small business contract manufacturer for military, medical, vision, robotic, and storage industries. TCC is an ISO 9001:2008 company, located in Costa Mesa, CA. Technical Cable Concepts has been providing cabling solutions since 1989. Contact: Patrick Hope, Sales, [path@techcable.com](mailto:path@techcable.com).

## Tecport Optics, Inc.

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, Ophthalmic, 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. Process is pre-configured, and installed systems are production-ready within one week. Contact: Tam Le, President, [tamle@tecportoptics.com](mailto:tamle@tecportoptics.com); Joe Kim, Vice President, [jkim@tecportoptics.com](mailto:jkim@tecportoptics.com).

#425

## Teledyne DALSA

SPIE Corporate Member

605 McMurray Rd, Waterloo, ON, Canada, N2V 2E9  
+1 519 886 6001; fax +1 519 886 2317  
[cees.draijer@teledynedalsa.com](mailto:cees.draijer@teledynedalsa.com); [www.teledynedalsa.com](http://www.teledynedalsa.com)

Teledyne DALSA is an international leader in high performance digital imaging with core competencies in smart cameras, IP cameras, X-Ray and Near Infrared cameras. Established in 1980, with over 1000 employees, Teledyne DALSA designs, develops, manufactures and markets an array of its own imaging sensors, cameras, and integrated image processing software for applications covering security, industrial inspection, aerospace and life sciences. Contact: Cees Draijer, Senior Program Manager, [cees.draijer@teledynedalsa.com](mailto:cees.draijer@teledynedalsa.com); Maureen Chesney, International Tradeshows & Events, [maureen.chesney@teledynedalsa.com](mailto:maureen.chesney@teledynedalsa.com).

#524

## Plan to Attend FREE Product Demonstrations

Refer to pages 24–25 for schedule and location.

## Teledyne Imaging Sensors

#524

1049 Camino Dos Rios, Thousand Oaks, CA, 91360  
+1 805 373 4558; fax +1 805 373 4775  
[rkoegle@teledyne.com](mailto:rkoegle@teledyne.com); [www.teledyne-si.com](http://www.teledyne-si.com)

Teledyne Imaging Sensors (TIS) is engaged in the design, development and production of high performance visible and infrared sensor subsystems used in DoD, and government, tactical and space applications as well as astronomy and civil space applications. TIS also has developed and is manufacturing laser eye protection spectacles, whose initial application is to protect military pilots. Contact: Robert Koegle, Program Manager, Tactical & Camera Products, [rkoegle@teledyne.com](mailto:rkoegle@teledyne.com); John Montroy, Director, Tactical & Camera Products, [jmontroy@teledyne.com](mailto:jmontroy@teledyne.com).

## Teledyne Judson Technologies

#524

SPIE Corporate Member

221 Commerce Dr, Montgomeryville, PA, 18936-9641  
+1 215 368 6900; fax +1 215 362 6107  
[www.teledynejudson.com](http://www.teledynejudson.com)

Teledyne Judson Technologies (TJT) is a global leader for IR sensors from the VIS to VLWIR spectrum used in military, space, and commercial markets. TJT has added two dimensional focal plane arrays (InGaAs, InSb, and MCT) and IDCA's to its product suite. Products are used in surveillance, law enforcement & security, laser beam diagnostics and range finding, and chemical & biological detection. We offer supplementary electronics, optics, Peltier cooling, and cryo-cooled modules. Contact: Mark Sediva, Sales Engineer, [msediva@teledynejudson.com](mailto:msediva@teledynejudson.com).

## Telops Inc.

#1024

SPIE Corporate Member

100 - 2600 Ave St-Jean-Baptiste, Quebec, QC, Canada, G2E 6J5  
+1 418 864 7808; fax +1 418 864 7843  
[contact@telops.com](mailto:contact@telops.com); [www.telops.com](http://www.telops.com)

Telops is a leading supplier of high performance infrared cameras and hyperspectral imaging systems for defence and security, environmental and industrial applications. Telops has also developed the new HD-IR 1280 High Definition Scientific Infrared Camera, the FAST-IR 1000, the first 1,000 FPS Infrared Camera, the TEL-1000, and the powerful Hyper-Cam. With Telops Systems, you will detect, identify and quantify remote substances previously invisible. Contact: Vincent Farley, Business Development Manager, [vincent.farley@telops.com](mailto:vincent.farley@telops.com); Paul Chabot, Vice-President, Sales & Marketing, [paul.chabot@telops.com](mailto:paul.chabot@telops.com).

## Temmek Optics Ltd.

#1325

SPIE Corporate Member

PO Box 159, Yavne, Israel, 81101  
+972 8 943 8408; fax +972 8 943 8390  
[temmek@temmek.com](mailto:temmek@temmek.com); [www.temmek.com](http://www.temmek.com)

## Tessera Inc.

#411

SPIE Corporate Member

3025 Orchard Dr, San Jose, CA, 95134  
+1 408 321 6754; fax +1 408 321 2904  
[mmichels@tessera.com](mailto:mmichels@tessera.com); [www.tessera.com](http://www.tessera.com)

Tessera invests in, licenses and delivers innovative miniaturization technologies for next-generation electronic devices. The company offers solutions in micro-electronics and imaging and optics. The company also offers customized micro-optic lenses, from diffractive to refractive optical elements to integrated micro-optical subassemblies. Tessera licenses its technologies, as well as delivers products based on these technologies, to promote the development of the supply chain infrastructure.





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## Textron Defense Systems

#3020

201 Lowell St, Wilmington, MA, 01887  
+1 978 657 2100; fax +1 978 657 2229  
info@systems.textron.com; www.textrondefense.com  
Textron Defense Systems employs advanced technology and industry expertise to develop and manufacture innovative product solutions including air-and ground-based smart weapons; directed energy weapons; intelligence, surveillance and reconnaissance, or ISR, systems; and protection systems. Its distinctive solutions for U.S. and allied militaries, aerospace and homeland security communities provide precision effects, intelligence-gathering capabilities and force protection. Contact: Todd Kulik, Manager, Business Development, tkulik@systems.textron.com.

## Thales Cryogenics B.V.

#308

Hooge Zijde 14, Eindhoven, The Netherlands, 5626 DC  
+31 40 250 3723; fax +31 40 250 3777  
hans.vanderweijden@nl.thalesgroup.com;  
www.thales-cryogenics.com

With more than 30 years of experience and over 65,000 coolers manufactured, Thales Cryogenics is an authority in the field of miniature cryocoolers. Our products offer a complete range of cooling solutions, spanning from lightweight rotary mono-bloc and linear dual opposed piston coolers to very fast Joule Thomson coolers. Contact: Hans van der Weijden, Sales and Marketing Manager, hans.vanderweijden@nl.thalesgroup.com.

## Thermoteknix Systems Ltd.

#1117

Teknix House, 2 Pembroke Ave, Waterbeach Cambridge, United Kingdom, CB5 9QR  
+44 1223 204 000; fax +44 1223 201 010  
enquiries@thermoteknix.com; www.thermoteknix.com

### Featured Product: MicroCAM range of 640x480 17micron ultra low power miniature thermal imaging cameras cores & engines.

Thermoteknix Systems Ltd are showcasing their MicroCAM 640x480 17micron range of uncooled microbolometer cores & cameras, including thermal monocular/goggles & TiCAM 750MR night vision binoculars, for reconnaissance, border & homeland security, target acquisition, counter drug ops & general situational awareness. Based on Thermoteknix MicroCAM low power engines, TiCAM 750 is available with GPS, DMC & Video recording options. Full range of Thermoteknix MIRICLE cores & cameras will be on display. Contact: Alistair Brown, Product Manager (Imaging), a.brown@thermoteknix.com; Bob Blocksidge, Sales Manager North America, b.blocksidge@thermoteknix.com.

## Thorlabs, Inc.

**SPIE** Corporate Member

435 Rt 206, Newton, NJ, 07860  
+1 973 300 3000; fax +1 973 300 3600  
sales@thorlabs.com; www.thorlabs.com

Thorlabs is an innovative company dedicated to serving the research and industrial communities by designing and manufacturing photonics equipment. Founded in 1989, Thorlabs continues to expand its integrated product portfolio, which includes optomechanical, motion control, vibration isolation, optical, fiber, light analysis, laser, SLD, optical amplifier, and imaging components and systems. Please visit [www.thorlabs.com](http://www.thorlabs.com). Contact: sales@thorlabs.com.

**#638**

## Threat Spectrum Inc.

PO Box 5955, Santa Clara, CA, 95056-5955  
+1 323 633 6704  
mike.shannahan@threatspectrum.com;  
www.threatspectrum.com

**Featured Product: Man portable video surveillance for covert perimeter protection, intelligence, and cordon & search.**

Silicon Valley innovator of rugged video surveillance equipment for high value asset protection. Contact: Mike Shannahan, CEO, [mike.shannahan@threatspectrum.com](mailto:mike.shannahan@threatspectrum.com).

**#242**

## Timbercon

17387 SW 63rd Ave, Lake Oswego, OR, 97035  
+1 503 827 8141; fax +1 503 228 6747  
www.timbercon.com

**Featured Product: High Speed 4-channel FBG Detonation Velocity Measurement System and Fiber Bragg Grating Sensors.**

Timbercon is a fiber optic products manufacturing company providing an array of custom and standard connectivity solutions. Products include: armadillo cables, ruggedized cables, military cables, broadcast cables, high density interconnects, ruggedized optical and electrical loopbacks, netsim modules, attenuators, coupler/splitters, Fiber Bragg Grating Sensors, and PM assemblies. Timbercon has pioneered multiple new proprietary products, many of which are now considered to be industry standards. Contact: John Lee, VP Sales & Marketing, [johnl@timbercon.com](mailto:johnl@timbercon.com).

**#1427**

## Tower Optical Corp.

**SPIE** Corporate Member

3600 S Congress Ave Unit J, Boynton Beach, FL, 33426  
+1 561 740 2525; fax +1 561 740 2518  
sales@toweroptical.com; www.toweroptical.com

**Featured Product: 10mm Waveplates for high performance and low cost available at any wavelength.**

Tower manufactures precision opticals including zero order and Achromatic waveplates, beamsplitters, prisms, mirrors, windows, lenses, optical flats, Transmission flats, filters and custom optics. Machined metal parts, optical mounting rings and assembly of optical components is also available. Commercial and military parts accepted. Tower is an SD-VOSB company certified to ISO 9001:2008. Contact: Joel Kramer, Director of Sales, [Joel@toweroptical.com](mailto:Joel@toweroptical.com); Ken Weinberger, Sales Engineer, [kweinberger@toweroptical.com](mailto:kweinberger@toweroptical.com).

**#201**

## Tower Solutions

9814 N 83rd Pl, Scottsdale, AZ, 85258  
+1 480 315 8830; fax +1 480 315 8833  
[akarson@towersolutionsinc.com](mailto:akarson@towersolutionsinc.com); [www.towersolutionsinc.com](http://www.towersolutionsinc.com)

**Featured Product: Automatic, self-erecting towers, used for surveillance, telecommunications and lifting.**

Tower Solutions creates totally automatic self-erecting towers. 1) 80 foot tower with a 2,000 lb. payload capacity; 2) 40 foot tower with a 250 lb. payload capacity; 3) 20 foot tower with a 140 lb. payload capacity -- it can be mounted on the bumper or roof of a HUMVEE while being operated in the cab. All versions (portable or stationary) rise to full height in minutes at the "push of a button", can stop at any height, have high wind ratings and options and customization are available. Contact: Allen Karson, President, [akarson@towersolutionsinc.com](mailto:akarson@towersolutionsinc.com).

**#3201**

## TowerJazz

4321 Jamboree Rd, Newport Beach, CA, 92660  
+1 949 435 8000; fax +1 949 435 8757  
[general\\_info@towerjazz.com](mailto:general_info@towerjazz.com); [www.towerjazz.com](http://www.towerjazz.com)

TowerJazz supplies strategic, on-shore foundry services for critical Aerospace and Defense applications. We have extensive capabilities bringing the broad range of commercially available technologies and services to the A&D community. We serve the widest range of A&D technologies including Large Die, ROICs, MEMS, and mwave. Our business model was developed to support various levels of engagement from very low volume development and early prototype needs to high volume production. Contact: Mike Scott, Director Sales and Marketing, Aerospace and Defense, [mike.scott@towerjazz.com](mailto:mike.scott@towerjazz.com).

**#3607**

## Trio Optics GmbH

**SPIE** Corporate Member

Hafenstr 35-39, Wedel, Germany, 22880  
+49 4103 18006 0; fax +41 4103 18006 20  
[info@trioptics.com](mailto:info@trioptics.com); [www.trioptics.com](http://www.trioptics.com)

**Featured Product: OptiCentric® 3D. Measuring lens centering, air gaps, and center thickness inside of optical systems.**

Leading manufacturer of 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® Leading 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: Alexandra Fong, Marketing Manager, [a.fong@trioptics.com](mailto:a.fong@trioptics.com).

**#738**

## TwinStar Optics and Coatings, Inc.

**SPIE** Corporate Member

6741 Commerce Ave, Port Richey, FL, 34668  
+1 727 847 2300; fax +1 727 847 2304  
[sales@twinstaroptics.com](mailto:sales@twinstaroptics.com); [www.starstar.com](http://www.starstar.com)

**Featured Product: High Damage, Low Loss Laser Coatings Mid/Long Wave IR Coatings Sharp Filters Edge Metallization.**

TwinStar is a global leader in the fabrication and coating of precision optics and crystals. Twinstar's coating lab produces high damage coatings from the UV thru the FAR IR including solderable edge metallizations. TwinStar fabricates waveplates, etalons, lens ducts, laser slabs/rods, prisms, mirrors, and provides bonding and optical assembly services and also works with linear/non-linear laser crystals including YAG, KTP, LBO, Kigre glasses. TwinStar is an ISO 9001:2008 certified company. Contact: Peter Thomas, Director of Sales & Marketing, [sales@twinstaroptics.com](mailto:sales@twinstaroptics.com); Mark Gruttadauria, General Manager, [markg@twinstaroptics.com](mailto:markg@twinstaroptics.com).

**#1031**

**ULIS****#503**

BP 27 ZI des Iles Cordees, Veurey Voroize, France, 38113  
+33 4 76 5374 70; fax +33 4 76 5374 80  
ulis@ulis-ir.com; www.ulis-ir.com

**Featured Product: Uncooled Infrared detector.**

ULIS, a subsidiary of Sofradir, specializes in the design and manufacture of innovative, high quality uncooled microbolometers for thermography, automotive, safety and military applications. It enables makers of infrared equipment to produce low weight, low power consumption and cost-effective infrared cameras in large volume. ULIS is located in Veurey-Voroize, near Grenoble, and ULIS employs 120 people. For more information: <http://www.ulis-ir.com>. Contact: Jean-Luc TISSOT, Marketing & Technical Director, [jl.tissot@ulis-ir.com](mailto:jl.tissot@ulis-ir.com); Sébastien TINNES, Product Line Manager, [s.tinnes@ulis-ir.com](mailto:s.tinnes@ulis-ir.com).

**UltraSource, Inc.****#3308**

22 Clinton Dr, Hollis, NH, 03049  
+1 603 881 7799; fax +1 603 881 9966  
[www.ultrasource.com](http://www.ultrasource.com)

**Featured Product: Ultrafast – Rapid Prototyping Program; Introducing the First and Only Thin Film Prototyping Program.**

In business 20 years, UltraSource, Inc. provides custom thin film circuit and interconnect manufacturing services. We continue to lead the way with new innovations like our UltraFAST program, which can supply prototypes in as little as 4 working days. When you need thin film performance for your new circuit, motherboard, chip carrier, or metalized window, USI is the one place you can go to for all your thin film prototypes and production needs. Contact: Kevin Gallery, Director of Business Development, [kallery@ultrasource.com](mailto:kallery@ultrasource.com).

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PO Box 737, Quapaw, OK, 74363  
+1 918 673 1650; fax +1 918 673 2121  
[optics@umicore.com](mailto:optics@umicore.com); [www.optics.umicore.com](http://www.optics.umicore.com)

Umicore Electro-Optic Materials offers infrared materials, optical coatings, components and assemblies for thermal imaging applications using either Ge or GASIR®. GASIR® chalcogenide glass can be molded or finished conventionally with DPT with complex geometry. Umicore has developed coatings, including iDLC hard coating for GASIR®. Umicore's optical-mechanical design competencies enable the manufacture of lens assemblies. Umicore Electro-Optic Materials has operations in the USA and Europe. Contact: Jeff Koch, Sales Manager, [jeff.koch@am.umicore.com](mailto:jeff.koch@am.umicore.com); Priyesh Narsale, Sales and Program Manager, [priyesh.narsale@am.umicore.com](mailto:priyesh.narsale@am.umicore.com).

**United Lens Co., Inc.****#3100**

259 Worcester St, Southbridge, MA, 01550  
+1 508 765 5421; fax +1 508 765 0500  
[www.unitedlens.com](http://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 - Molding Division, [kplouffe@unitedlens.com](mailto:kplouffe@unitedlens.com); Paul Digregorio, Vice President, [pdigregorio@unitedlens.com](mailto:pdigregorio@unitedlens.com).

**Universal Photonics, Inc.****#1227**

**SPIE** Corporate Member

495 W John St, Hicksville, NY, 11801  
+1 516 935 4000; fax +1 516 935 4139  
[info@universalphotonics.com](mailto:info@universalphotonics.com); [www.universalphotonics.com](http://www.universalphotonics.com)

**Featured Product: LP UNALON - Microcellular foam elastomer designed for high precision polishing.**

Source for advanced surfacing products & technology. Lapping/polishing consumables for glass, infrared materials, plastics, semiconductors, electro, laser, and fiber optics. Including polish pads, diamond slurries, sub-angstrom polishes, ultra pure alumina, colloidal silica, thermoplastic adhesives, cleaners, compounds, lapping film, precision pitch, lens bonding material, Advantage & DAMA machinery, HKS centrifuges, MegaVap Liquid Elimination System, double-sided, polishing/lapping machines. Contact: Jerry Hammock, Sales Rep, [jerryh@universalphotonics.com](mailto:jerryh@universalphotonics.com); Justin Mahanna, Technical Sales, [justinm@universalphotonics.com](mailto:justinm@universalphotonics.com).

**Vectronix Inc.****#818**

801 Sycolin Rd SE Ste 206, Leesburg, VA, 20175  
+1 703 777 3900; fax +1 703 777 3940  
[www.vectronix.com](http://www.vectronix.com)

**Velodyne Lidar, Inc.****#1317**

345 Digital Dr, Morgan Hill, CA, 95037  
+1 408 465 2800; fax +1 408 779 9227  
[help@velodyne.com](mailto:help@velodyne.com); [www.velodynelidar.com](http://www.velodynelidar.com)

Velodyne LiDAR, Inc. is a leading manufacturer of high definition lidar sensors. Headquartered in Morgan Hill, California, the company's HDL-64E and HDL-32E sensors are used in a variety of military and commercial autonomous vehicle applications as well as 3-D mapping, surveying and other applications. Contact: Mike Dunbar, Business Development Lidar, [mdunbar@velodyne.com](mailto:mdunbar@velodyne.com); Brent Schwarz, V.P. Sales & Marketing, [bschwarz@velodyne.com](mailto:bschwarz@velodyne.com).

**Vincent Associates****#227**

803 Linden Ave, Rochester, NY, 14625  
+1 585 385 5930; fax +1 585 385 6004  
[vincentassociates@uniblitz.com](mailto:vincentassociates@uniblitz.com); [www.uniblitz.com](http://www.uniblitz.com)

Vincent Associates is the manufacturer of UNIBLITZ electronically programmed shutters & shutter drive systems, with standard devices (including the LS, VS and the CS series of high reliability shutter systems), the XRS (for X-ray use) series and the new NS & DSS shutter series. Standard aperture sizes ranging from 1mm - 90mm with many types of microscope and video mounting systems offered for specific shutter mounting applications. Custom configurations and OEM systems are also available. Contact: Stephen Pasquarella, Senior VP, [spasq@uniblitz.com](mailto:spasq@uniblitz.com); Adam J. Lamb, VP Manufacturing, [alamb@uniblitz.com](mailto:alamb@uniblitz.com).

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#304

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+1 603 891 0123; fax +1 603 891 0574  
judy@pennwell.com; www.vision-systems.com

## Vision Systems Technology, LLC

#1140

**SPIE** Corporate Member

10955 Avenida Del Gato, San Diego, CA, 92126  
+1 858 449 1562  
kris.balch@visionsystech.com; www.visionsystech.com

**Featured Product: 29 Million Pixel CCD Camera. Cameras for Persistent Surveillance, ISR, UAV, and Surveillance.**

Distributor of Vieworks high performance digital cameras serving Military, Industrial, and Scientific market applications such as Persistent Surveillance, ISR, UAV, and other Surveillance applications. Contact: Terry Guy, VP Sales & Marketing, terry.guy@visionsystech.com; Kris Balch, President, kris.balch@visionsystech.com.

## Vision4ce LLC

#3009

550M Ritchie Hwy Ste 135, Severna Park, MD, 21146  
+1 410 336 4272; fax +1 410 510 1170  
brad.zell@vision4ce.com; www.vision4ce.com

## Vivid Engineering

#3926

418 Boston Tpke Ste 104, Shrewsbury, MA, 01545  
+1 508 842 0165; fax +1 508 842 8930  
info@vividengineering.com; www.vividengineering.com

**Featured Product: CLV-412 4-Port Camera Link Video Splitter & CLM-611 4-Port Camera Link Multiplexer.**

Vivid Engineering offers a broad range of supporting products for Camera Link imaging applications including video splitters, camera selectors, low-cost repeaters, LVDS & RS-422 converters, camera simulators, PoCL repeater/adaptor, and breakout box. Custom engineering and OEM solutions are also offered. Contact: David Johnson, President, davej@vividengineering.com.

## VLOC

#1239

7826 Photonics Dr, New Port Richey, FL, 34655  
+1 727 375 8562; fax +1 727 375 5300  
www.vloc.com

Manufacturer of fluoride and oxide crystals including YAG, YLF, YAIO, ruby, LISAF, LiSGaF and YVO4. Nonlinear materials include KTP, KTA and KNbO3. Components include laser cavity flow tubes, mirrors, prisms, lens duct and waveplates. Custom services include wafer fabrication, repolishing, coatings and optical subassemblies. Coatings are dielectric, metallic, ion-assisted deposition and ion-beam sputtering. Contact: Jim Keck, Director of Sales and Marketing, info@vloc.com.

## Voltage Multipliers Inc.

#1127

8711 W Roosevelt, Visalia, CA, 93291  
+1 559 651 1402; fax +1 559 651 0740  
mfulley@voltage-multipliers.com; www.voltage-multipliers.com

**Featured Product: 2.5kV OC025 High Voltage Opto-coupler features high gain, and high isolation in a small package.**

Voltage Multipliers, Inc. opened in November of 1980. Since then, our product line has grown to include high voltage diodes, high voltage power supplies, opto-couplers, and rectifier assemblies. Our products are found in military, space, industrial, medical, and portable X-ray applications. VMI is ISO9001:2008 certified. VMI is represented world-wide, and boasts direct factory support. VMI is partnered with CalRamic Technologies LLC, maker of high voltage ceramic capacitors. Contact: Karen Spano, Sales Administration Manager, kspano@voltage-multipliers.com; Margaret Fulleylove, Sales, mfulley@voltage-multipliers.com.

## Wafer Technology Ltd.

#1214

34 Maryland Rd, Tongwell, Milton Keynes, United Kingdom, MK15 8HJ  
+44 1908 210444; fax +44 1908 210443  
sales@wafertech.co.uk; www.wafertech.co.uk.

## WIBE Telescopic Mast Systems

#427

2095 Indian Summer Ln, Vero Beach, FL, 32963  
+1 772 539 9517  
randy.catts@wibe-usa.com; www.wibe-usa.com

**Featured Product: TM 128/6.1-1.47 unguyed 20 ft manual mast that retracts to 4.8 ft for on the move applications.**

WIBE is the world's leading manufacture of telescoping mast systems. We feature a range of manual and powered telescopic masts up to 100 ft for a variety of communications and sensor payloads. WIBE offers unguyed on-the-move or quick move masts, guyed lightweight and guyed heavy duty masts designed to meet the demanding conditions of today's military and domestic environments. WIBE also provides antenna/sensor aiming devices and vehicle mounting accessories. WIBE is an approved DOD supplier. Contact: Randall G. Catts, randy.catts@wibe-usa.com.

## Williams Advanced Materials

#3601

*see Materion Corporation*

## Wordingham Technologies

#226

**SPIE** Corporate Member

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

Wordingham Technologies provides 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. For Quality, Delivered - visit www.wordingham.com. Contact: Bob Orcutt, General Manager, borcutt@wordingham.com.

## Xactra Technologies

#233

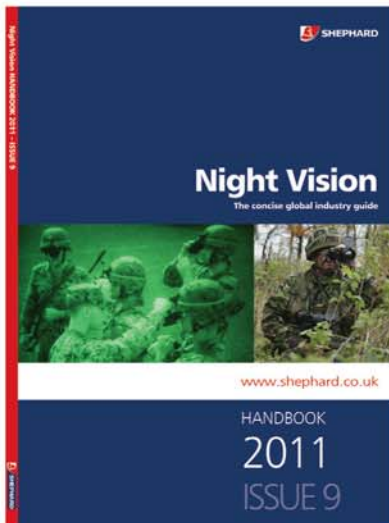
9 Marway Circle, Rochester, NY, 14624  
+1 585 426 2030; fax +1 585 426 2709  
sales@xactra.com; www.xactra.com

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, Thermal Imaging, Night Vision, Thermal Weapon Sights. Xactra Technologies: Quality obsessed, Schedule driven and Competitively focused. Contact: J. Michael Grady, VP, sales@xactra.com.

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Ambachtenlaan 44, Leuven, Belgium, 3001  
+32 16 38 99 00; fax +32 16 38 99 01  
sales@xenics.com; www.xenics.com

**Featured Product: SWIR and LWIR image fusion with OEM engines for night vision.**

Xenics is the leading developer of innovative infrared detection solutions for a wide range of applications. Xenics designs, manufactures and sells infrared detectors and cameras, both line-scan and 2-D, covering the infrared wavelength ranges from 0.4 to 14 micrometers. In addition, Xenics delivers custom products according to the agreed specification and planning. Contact: Sales department, Sales, sales@xenics.com.

#3119

## Z&Z Optoelectronics Tech. Co., Ltd.

SPIE Corporate Member

No 3 Keyuan South Rd, Chengdu Sichuan, China, 610041  
+86 28 8513 9768; fax +86 28 8525 5889  
sales@zzoptic.com; www.zzoptic.com

**Featured Product: Our products list includes plano and spherical optics with kinds of infrared and visible materials.**

Z&Z is established in 1998 in Chengdu, China. Z&Z specializes in high precision optics. With our own super polishing technology, our optics can meet roughness 0.1-0.2nm, flatness 1/30 lambda and surface quality 5-1. Z&Z has mass production capacity of 1000K precision optics per year with 126 employees in 32,000 square feet facility. Contact: Cynthia Qi, Business Manager, sales@zzoptic.com.

#313

## Yole Developpement

45 rue Sainte Genevieve, Lyon, France, 69006  
+33 472 83 01 80; fax +33 472 83 01 83  
www.yole.fr

Since 1998 Yole Développement has grown to become a group of companies providing market research, technology analysis, strategy consulting, media in addition to finance services. With a solid focus on emerging applications Yole Développement group has expanded to include more than 40 associates worldwide covering MEMS and other areas. The group supports companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business. Contact: Sandrine Leroy, Media & PR Manager, leroy@yole.fr.

#3920

## Zygo Corporation

SPIE Corporate Member

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, mtricard@zygo.com.

#917

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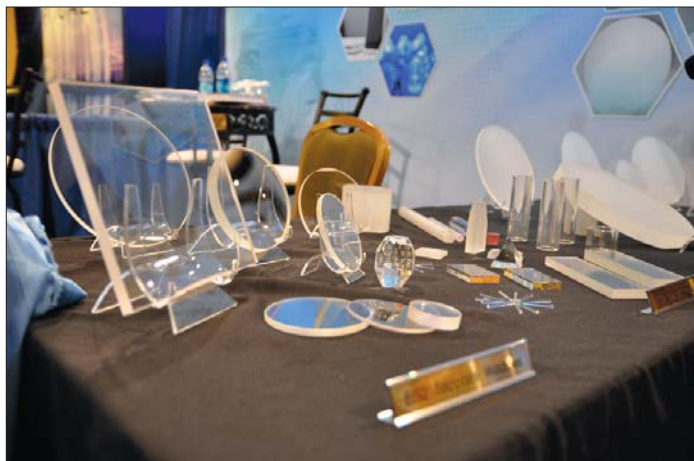
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Meller Optics, Inc.  
Multisorb Technologies  
Princeton Scientific Corp  
Universal Photonics, Inc.

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4D Technology Corp.  
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Axsys Technologies - General Dynamics - AIS  
BEI Precision Systems & Space Co.  
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JENOPTIK Optical Systems, Inc.  
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Raytheon Company  
SCHOTT North America, Inc. - Defense  
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United Lens Co., Inc.  
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Vincent Associates  
Xenics

## Cameras and CCD Components

Active Silicon Inc.  
Adimec  
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AGM Container Controls, Inc.  
Allied Vision Technologies Inc.  
Alternative Vision Corp.  
Ampex Data Systems Corp.  
ARS Technical Sales Corp  
Bodkin Design & Engineering, LLC  
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Imperx, Inc.  
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IRcameras, Inc.  
JAI, Inc.  
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Moog QuickSet



MP Technologies  
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New Scale Technologies, Inc.  
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WIBE Telescopic Mast Systems

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Scintec Corporation  
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Timbercon  
Tower Solutions  
WIBE Telescopic Mast Systems

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

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



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McQ Inc.  
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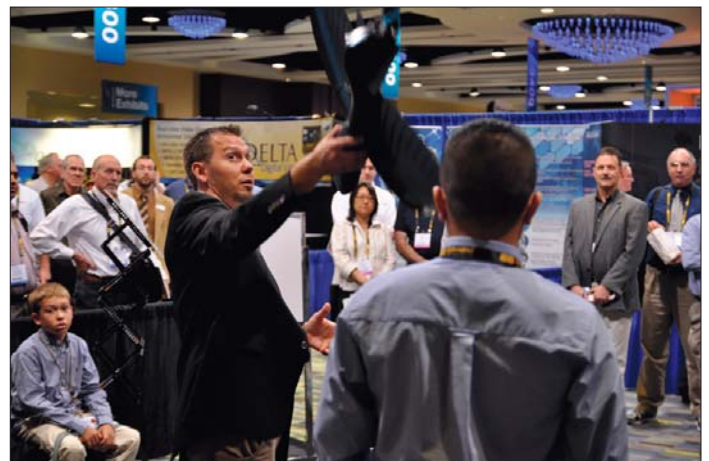
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## Fiber Optic Components, Equipment, Systems

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Advanced Laser Diode Systems  
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Advanced Technical Ceramics Co. (AdTech Ceramics)  
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AdValue Photonics  
Advanced Cooling Technologies,  
Inc.  
Advanced Plasmonics





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 Ocean Optics, Inc.  
 OFS Specialty Photonics Division  
 OmniPulse Technology

## Ion-Beam Lithography

APPLIED IMAGE Inc.  
 Geib Refining Corp.

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

AdValue Photonics  
 Advanced Laser Diode Systems A.L.S. GmbH  
 Advanced Plasmonics  
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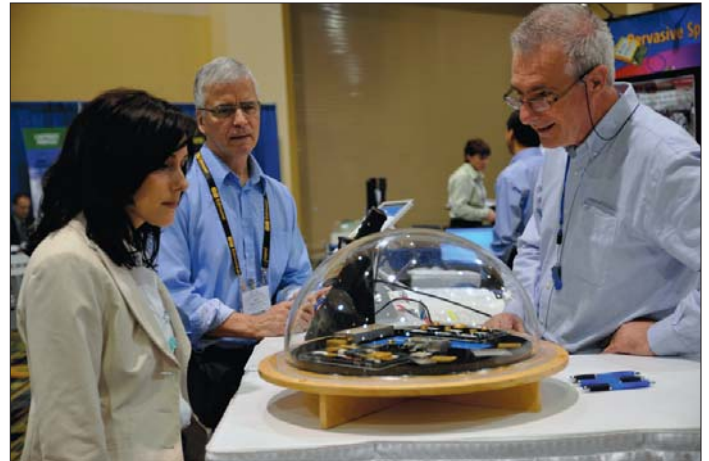
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Yole Developpement

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AMETEK  
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## Non-Optical Lithography

APPLIED IMAGE Inc.  
IMT North America Inc.  
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American Diamond Turning  
American Photonics  
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Angstrom Precision Optics  
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 Newport Corp.  
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 Ninbgo Sunny Infrared Technologies Co, Ltd  
 Nivo Technology  
 Novotech, Inc.  
 Nu-Cast, Inc.  
 OFS Specialty Photonics Division

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 OJSC Germanium  
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 Onyx Optics Inc.  
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 Optometrics Corp.  
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 PFG Precision Optics  
 Phoenix Optical Technologies Ltd.  
 Photon Spot Inc.  
 Photonic Products Group Inc.  
 Photonic Sense GmbH  
 PicoQuant GmbH  
 PLX, Inc.  
 Poco Graphite, An Entegris Company  
 Polymer Optics, LLC  
 Precision Optical  
 Precision Optics Gera  
 Princeton Scientific Corp  
 Qioptiq  
 Quality Thin Films, Inc.  
 Quantum Coating, Inc.  
 Rainbow Research Optics, Inc.  
 Raytheon ELCAN Optical Technologies  
 RepExact, LLC  
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 Rochester Precision Optics LLC  
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 Rotem Industries  
 RPC Photonics, Inc.  
 Rubicon Technology, Inc.  
 Schneider Optics, Inc.  
 SET - Smart Equipment Technology S.A.S.  
 Shellcast Foundries Inc.  
 Sierra Precision Optics  
 Solid Sealing Technology  
 Solid State Scientific Corp.  
 Souriau PA&E  
 Special Optics  
 Spectrogon US Inc.  
 StingRay Optics, LLC  
 Sydor Instruments LLC  
 Syntec Optics  
 Tamron Co, Ltd.  
 Techmetals, Inc.  
 Technical Cable Concepts Inc.  
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 Hellma USA, Inc.  
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 IRnova AB  
 IRZoom.com

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 Precision Armaments Laboratory  
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 Sensors Unlimited-Goodrich ISR Systems  
 Smiths Detection  
 SOFRADIR  
 Teledyne Imaging Sensors  
 Teledyne Judson Technologies  
 Xenics

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 FiberTech-RoMack



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Gulf Photonics, Inc.  
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OFS Specialty Photonics Division  
O-m6 Technologies Inc.  
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Timbercon  
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CPS Technologies Corp.  
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JML Optical Industries Inc.

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VLOC  
Yole Developpement  
Z&Z Optoelectronics Tech. Co.,  
Ltd.

## Optical Test and Measurement Equipment, Interferometer

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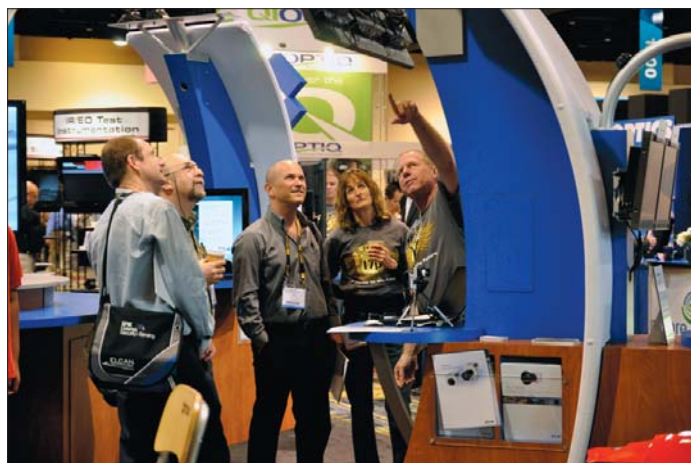
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## Optical/Laser Microlithography

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 PFG Precision Optics  
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 Tecport Optics, Inc.  
 Tessera Inc.

Timbercon  
 Tower Optical Corp.  
 Trioptics GmbH  
 TwinStar Optics and Coatings, Inc.  
 United Lens Co., Inc.  
 VLOC  
 Z&Z Optoelectronics Tech. Co., Ltd.  
 Zygo Corporation

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 OmniPulse Technology  
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 Hofstadter Analytical Services  
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 ID Quantique  
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Meadowlark Optics  
MegaWatt Lasers, Inc.  
Micro Photon Devices  
MicroE Systems  
Microflown AVISA  
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Ocean Optics, Inc.  
OmniPulse Technology  
Ontar Corp.  
Opgal Ltd.  
Ophir Photonics LLC  
OPTICS 1, Inc.  
OZ Optics Ltd.  
Phase Sensitive Innovations  
Photek Limited  
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Physical Optics Corp.  
Pleora Technologies Inc.  
Poco Graphite, An Entegris Company

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Riegl USA, Inc.  
Sandia National Laboratories  
Santa Barbara Infrared, Inc.  
Savvy Optics Corp.  
Sensors Unlimited-Goodrich ISR Systems  
Shellcast Foundries Inc.  
Smart Material Corp.  
SOFRADIR  
Solid State Scientific Corp.  
Specim Spectral Imaging Ltd.  
Spectrolab, Inc.  
SRI International Sarnoff  
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Sydor Instruments LLC  
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Teledyne DALSA  
Teledyne Judson Technologies  
Telops Inc.

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Thales Cryogenics B.V.  
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ULIS  
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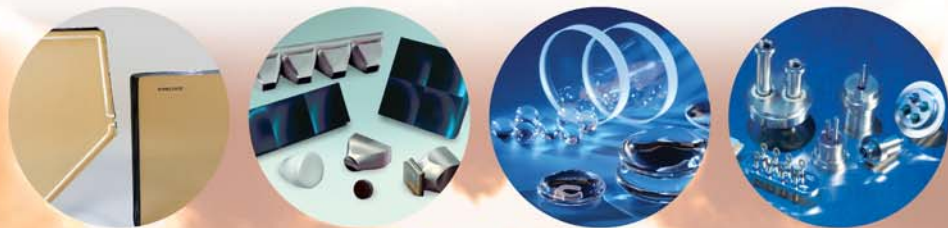
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