



# LIA TODAY

THE OFFICIAL NEWSLETTER OF THE LASER INSTITUTE OF AMERICA  
The international society dedicated to fostering lasers, laser applications, and laser safety worldwide.

FOCUS: LASER INNOVATIONS | VOLUME 19 NO. 1 | JANUARY / FEBRUARY 2011

Photo Courtesy of Dirk Petring at Fraunhofer ILT



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## LME 2011

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Laser Institute  
of America

Laser Applications and Safety

# LIA TODAY

THE OFFICIAL NEWSLETTER OF THE LASER INSTITUTE OF AMERICA

LIA TODAY is published bimonthly and strives to educate and inform laser professionals in laser safety and new trends related to laser technology. LIA members receive a free subscription to LIA TODAY and the *Journal of Laser Applications*® in addition to discounts on all LIA products and services.

The editors of LIA TODAY welcome input from readers. Please submit news-related releases, articles of general interest and letters to the editor. Mail us at LIA TODAY, 13501 Ingenuity Drive, Suite 128, Orlando, FL 32826, fax 407.380.5588, or send material by e-mail to lia@laserinstitute.org.

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## ABOUT LIA

Laser Institute of America (LIA) is the professional society for laser applications and safety. Our mission is to foster lasers, laser applications and laser safety worldwide.

We believe in the importance of sharing new ideas about lasers. In fact, laser pioneers such as Dr. Arthur Schawlow and Dr. Theodore H. Maiman were among LIA's original founders who set the stage for our enduring mission to promote laser applications and their safe use through education, training and symposia. LIA was formed in 1968 by people who represented the heart of the profession—a group of academic scientists, developers and engineers who were truly passionate about taking an emerging new laser technology and turning it into a viable industry.

Whether you are new to the world of lasers or an experienced laser professional, LIA is for you. We offer a wide array of products, services, education and events to enhance your laser knowledge and expertise. As an individual or corporate member, you will qualify for significant discounts on LIA materials, training courses and the industry's most popular LIA conferences and workshops. We invite you to become part of the LIA experience – cultivating innovation, ingenuity and inspiration.

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### CALENDAR OF EVENTS

#### Laser Safety Officer Training

July 12-14, 2011 | St. Louis, MO  
Dec. 6-8, 2011 | Orlando, FL

#### Laser Safety Officer with Hazard Analysis\*

Mar. 21-25, 2011 | Las Vegas, NV  
June 13-17, 2011 | Chicago, IL  
Sept. 12-16, 2011 | Washington, DC  
Oct. 24-28, 2011 | Orlando, FL

\*Certified Laser Safety Officer exam offered after the course.

#### Medical Laser Safety Officer Training\*

Mar. 12-13, 2011 | San Jose, CA  
\*Certified Medical Laser Safety Officer exam offered after the course.

#### Advanced Medical Laser Safety Officer Training

Sept. 8-11, 2011 | Atlanta, GA

#### Laser Additive Manufacturing Workshop

Feb. 16-17, 2011 | Houston, TX

#### ILSC® 2011

Mar. 14-17, 2011 | San Jose, CA

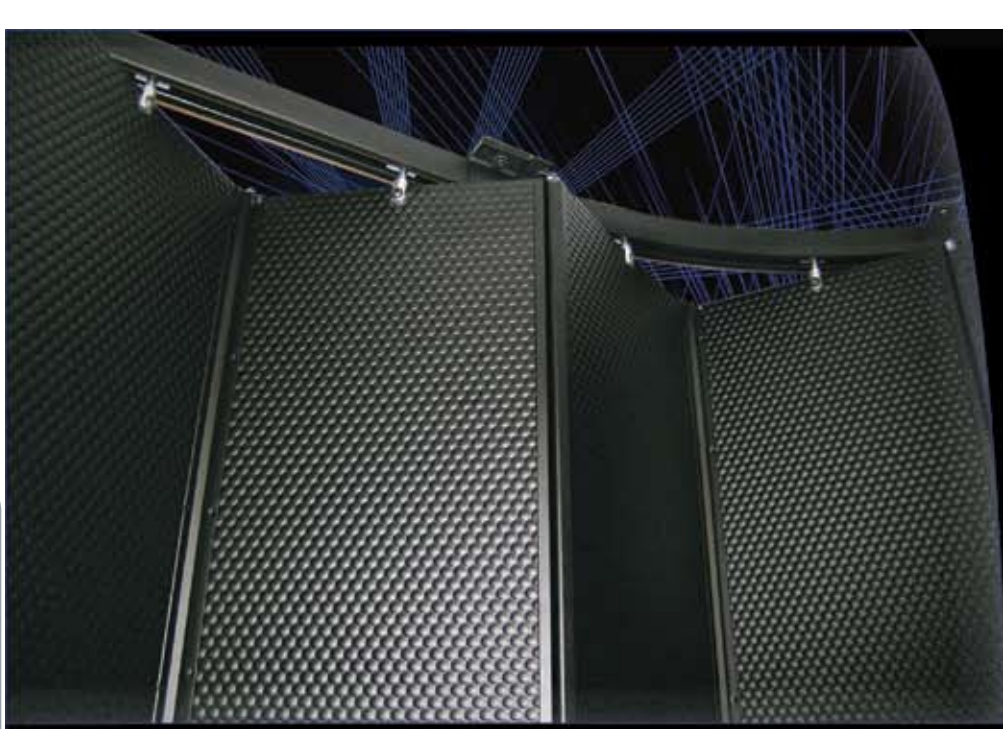
#### LME 2011

Sept. 27-28, 2011 | Chicago, IL

#### ICALEO® 2011

Oct. 23-27, 2011 | Orlando, FL

Visit [www.laserinstitute.org](http://www.laserinstitute.org) for all course and event listings.



## **EVER-GUARD®** *Laser Curtains*

Ever-Guard® retractable curtains are the most protective laser barriers available commercially. Designed for low and high power laser radiation, these curtains offer the flexibility of a fabric curtain with the protection of a metal barrier. Each system is built to individual requirements and is rated for 1200 W/cm<sup>2</sup> for 3 minutes. Available in stock sizes any width and height up to 8 feet. Custom sizes also available.

# **LASER SAFETY BARRIERS**



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## LIA ANNOUNCES ITS LASERS FOR MANUFACTURING EVENT

# LME 2011

LIA'S LASERS FOR MANUFACTURING EVENT

The Laser Institute of America (LIA) will hold its inaugural Lasers for Manufacturing Event (LME) on September 27<sup>th</sup> and 28<sup>th</sup> in Chicago.

In order to help U.S. manufacturers modernize and upgrade their technology and be competitive in the global economy, the Event is designed to fill a gap by providing designers and manufacturers everything they need to understand lasers and laser systems and how to employ them effectively and profitably.

The Event provides basic training on lasers and systems, courses on laser processes including welding and laser additive manufacturing, videos on laser processing and examples of parts made by lasers.

“Our intent is to showcase for you the major laser manufacturers and companies that build the equipment that goes into laser systems. Surprisingly, this is the first intensive event to bring together designers and manufacturers and concretely illustrate how lasers and laser systems can be employed effectively and profitably. Furthermore, top players in the field will display laser-manufactured parts on their booths, and experts will be there to explain the features to attendees. It all adds up to unparalleled insight into the cutting edge of laser manufacturing,” said Steve Capp, LIA’s 2011 president.

“It is about time for our industry to step up and provide a venue where serious prospects can visit and meet with those individuals and organizations that are providing the equipment and services to implement laser technology on their production line or products,” said Bill Shiner, Vice President Industrial for IPG Photonics.

The world’s leading laser and system manufacturers such as IPG, TRUMPF and many others will exhibit at the event and will have laser manufactured parts on their booths, and experts there to explain the features to attendees. A special feature of the event will be 10, 15 and 20 minute presentations by exhibitors on the advantages of their technology in a theater directly on the show floor.

“This will be a focused, optimized Event for current and potential laser users in the manufacturing community,” said LIA’s Executive Director Peter Baker. “No longer will manufacturing technologists seeking laser knowledge and technology have to comb through a large, traditional machining show searching for laser manufacturing! At LME, 100% of the exhibitors will be laser and system manufacturers, 100% of the attendees will be manufacturing people who want to use and learn to use lasers and 100% of the educational content is customized to the needs of those attendees. LME will provide an optimum interaction between users and suppliers in a compact, focused Event.”

“LME will be the show for laser applications,” said LIA’s Marketing Director Jim Naugle. “If you want to learn what a laser can do, how much it costs, how to justify the purchase, this is the go-to source. We want the novice user and the experienced user to learn the practical applications made possible by lasers.” LIA’s intention is that the new Event “satisfies a need for exhibitors to have a laser application/manufacturing exhibit for lasers and related equipment only,” Naugle said. “And, it satisfies a need for attendees to learn how to make money with lasers.”

LIA believes that this event will provide the optimum atmosphere designed to enhance attendees’ interaction with laser manufacturing experts; and will be the place to see the latest in laser technology, network with the industry’s elite and find solutions to current and further manufacturing needs.

To learn about the educational offerings, understand key benefits of exhibiting and preview what major companies have committed, visit [www.laserevent.org](http://www.laserevent.org) or call 1.800.34Laser.

One show, one voice, one mission — understanding laser technology. Don’t be left out! ■

## PRESIDENT'S MESSAGE



In our never-ending quest to further solidify LIA's position as the world's leading advocate for laser applications, we have announced our first Lasers for Manufacturing Event (LME). Set for Sept. 27-28 in Chicago, this one-of-a-kind expo in the industrial heart of the United States will focus on engineers who use lasers for manufacturing in industries ranging from automotive and aerospace to energy and consumer goods. Our

intent is to showcase for you the major laser manufacturers and companies that build the equipment that goes into laser systems. Surprisingly, this is the first intensive event to bring together designers and manufacturers and concretely illustrate how lasers and laser systems can be employed effectively and profitably.

Key LIA supporters have deliberated carefully for months to create what we're sure will be an eye-opening experience optimized for current and potential laser users in the manufacturing community.

What can attendees expect? For starters, key exhibitors will give 10-, 15- and 20-minute presentations in a theater on the show floor to illustrate the benefits of their technologies. Furthermore, top players in the field will display laser-manufactured parts on their booths, and experts will be there to explain the features to attendees. It all adds up to unparalleled insight into the cutting edge of laser manufacturing.

Learn more about this groundbreaking event at [www.laserevent.org](http://www.laserevent.org). We're excited to bring this opportunity to you, and we look forward to seeing you in Chicago.



Stephen Capp  
President, Laser Institute of America

## EXECUTIVE DIRECTOR'S MESSAGE



As we start the New Year and the new decade, my sincere thanks to 2010 President Nat Quick for his enthusiasm and positive support throughout this year. We welcome 2011 President Steve Capp, who has already served LIA well as treasurer and president elect. We look forward to making a good start to the new decade as we leave gloom and the difficulty of the recession behind us and commence the process of rebuilding and realigning LIA to be even more relevant and effective in the coming decade.

In addition to our traditional offerings such as ICALEO® and ILSC®, we are reorganizing our journal and building on the success of the Laser Additive Manufacturing (LAM) Workshop. The biggest project so far in our rebuilding is LIA's Lasers for Manufacturing Event (LME) scheduled for September 27<sup>th</sup> and 28<sup>th</sup> in Chicago.

LME is the brain child of past president and 2009 President's Award winner Bill Shiner. It is designed to show manufacturers how to use lasers and be effective and profitable in the new economy. The Event will provide users with everything they need to know in order to use lasers effectively in manufacturing and will provide exhibitors with an audience whose sole interest is in using lasers, so both groups will have an optimized event with no waste.

We wish all of our members and readers a successful and rewarding year.



Peter Baker, Executive Director  
Laser Institute of America  
[pbaker@laserinstitute.org](mailto:pbaker@laserinstitute.org)

# LASER CUTTING

## A MATURE LASER APPLICATION STILL HAS SOMETHING UP ITS SLEEVE

By Dirk Petring

The industrial market of laser cutting machines, the worldwide application scenarios of laser cutting in job shops and the manufacturing industry as well as related international research activities experienced substantial advancements in the last decade. Innovations in laser sources, machine technology, process automation and materials to be cut coincide with globally changing economical and ecological demands. Laser cutting “status quo” and “quo vadis” could be gathered from events such as the cutting sessions at ICALEO® 2010 and exhibitor presentations at EuroBLECH 2010.

### PROGRESS BY FIBER-COUPLED LASERS

Recently, the advent of fiber and disk lasers has really shuffled up the conventional CO<sub>2</sub> laser cutting market. System suppliers, customers and researchers became aware of new threats or opportunities, depending on their point of view. It needed a few years, but meanwhile the mist cleared up and nobody can ignore anymore the capabilities of the new lasers as well as the remaining benchmarks set by the established CO<sub>2</sub> laser technology. High system efficiency and availability as well as reduced floor space, operating costs and maintenance requirements of fiber-coupled 1-micron laser technology have gained market attention. No warm-up time of the resonator and no beam guiding system to be purged or re-adjusted are strong arguments for afflicted users of customary laser systems. On the other hand, limitations of fiber-coupled 1-micron systems in thick section cut quality are recognized, partly accepted by some customer markets and continuously shifted to higher thicknesses by ambitious research efforts.

TRUMPF has offered fiber-coupled flat sheet cutting machines based on lamp-pumped Nd:YAG lasers with a fair beam quality of about 12 mm\*mrad since the 1990s, before they launched the

first disk laser-driven flat sheet cutter in 2008. This new fiber laser cutting technology had been pioneered by Sahajanand from India and Finsomac from Italy. They realized first installations in 2005.

Without counting pure tube and 3-D machines, at the transition to the next decade at least 24 manufacturers of fiber-coupled multi-kW laser flat sheet metal cutting systems wanted to get a piece of the action (see collection of their respective major products in fig. 1). They integrate laser sources from five different companies, with IPG providing more than two-thirds of them with fiber laser sources. One quarter of the machine providers belong to the well-known world leaders in multi-kW sheet-metal laser cutting business, while more than one-third has their main history in plasma and flame cutting, punch press or water-jet machinery. They have seized the opportunity to expand their portfolio, partly also by combining one or more fiber laser torches and above-mentioned conventional cutting techniques in a single machine.

The potential of a laser source regarding cutting speed and quality can only be put into practice if it comes along with appropriate beam optics and gas nozzles, process sensors and control loops, machine dynamics and rigidity and material load/unload capabilities. Moreover, compliance with laser safety regulations is a must. Ultimately, the current and conceivable application range of a projected cutting system regarding materials, thicknesses, part and cut geometries and required throughput determines which system offers the most cost-effective solution.

### DIAGNOSTICS AND SIMULATION OF LASER CUTTING

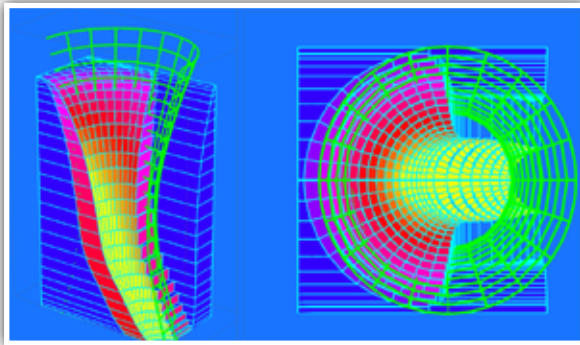
Understanding laser cutting requires looking at the process in detail. High-speed video diagnostics provides temporally and spatially resolved insight into the dynamics of laser cutting. That is how Fraunhofer ILT could reveal and explain crucial differences



Figure 1: Fiber-coupled laser flat sheet cutters of 24 different suppliers in alphabetical order.

in stainless steel cutting with 10 micron or 1 micron wavelength. The dynamically humping melt flow when using a fiber laser distinctively differs from the smooth and regular cutting front visualization in case of a CO<sub>2</sub> laser with comparable beam power and geometry (fig. 2).

Leadership in understanding parameter dependencies has become a key advantage for a successful design of modern manufacturing processes in a global competition. If an optimized system design and suitable process parameters have to be predicted without wasting resources by time consuming test series, simulation is the only option. There are very few sophisticated theoretical models of laser cutting able to describe the steady-state process regimes. Nevertheless, it makes a great difference, whether to speculate about reasons for achievable cutting speeds and qualities, or to calculate speed limits and process features which determine quality as a function of process parameters including wavelength, beam power and quality, F-number and focal position (fig. 3).



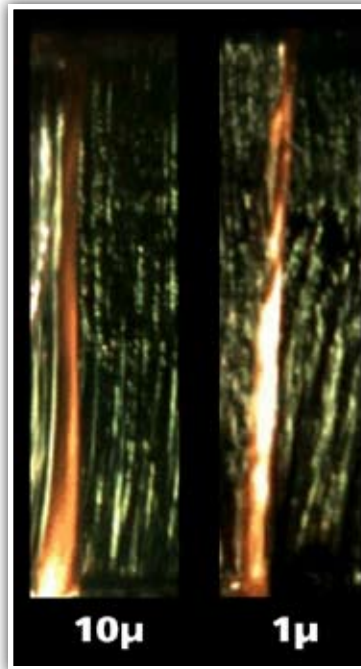
**Figure 3: CALCut simulation of a CO<sub>2</sub> laser cutting front under steady-state conditions.**

Fraunhofer ILT used the simulation software CALCut to explain the essential positive and negative impacts of multiple reflections in cutting with 1 micron wavelength lasers. Currently, also the dynamics of the cutting processes are theoretically conceived. Improvements in computer hardware and numerical methods offer tremendous progress in calculating laser-gas-material interactions and predicting process results. The international efforts in this field will increase and disclose secrets and provide surprises in the future.

## TRENDS IN SYSTEM TECHNOLOGY

A system for laser cutting contains a laser source, beam guidance and shaping optics, a machine for beam and material manipulation and a control unit. The laser source provides the beam power and quality. The shorter wavelength of 1micron lasers permits the efficient cutting of non-ferrous metals, including copper and brass. Lasers also provide solutions for cutting of non-metals, especially composites such as fiber-reinforced plastics that have gained in importance such as in transportation sectors. This presents a good opportunity to CO<sub>2</sub> lasers for reaching new markets due to their high absorbance in non-metals. Also ultrashort-pulsed kW-lasers will be an attractive option due to their non-linear material interaction with harmless but effective ablation.

The degrees of freedom available with high-beam quality lasers are still far from being fully utilized. They offer a big potential for improvements beyond present parameter ranges by completely adapting the tool to the material and the cutting task. Beam guidance and shaping determine the applicable beam properties. Accordingly, adaptively manipulating spatial and temporal distribution of laser energy, wavelength, polarisation and Poynting



**Figure 2: High-speed video diagnostics of CO<sub>2</sub> and fiber laser cutting fronts in 4 mm stainless steel.**



**Figure 4: High-speed cutting of 1.2 mm car body steel.**



**Figure 5: Remote cutting of 0.5 mm stainless steel.**

vectors with versatile optical equipment is an important task of future laser processing development.

High dynamics of beam or part motion are realized by scanners or direct drive technologies. Recent achievements with gas-assisted high-speed cutting and remote cutting without gas demonstrate how appropriate beam manipulation allows accomplishing hitherto unforeseen productivity in thin sheet processing (fig. 4-5). The current benchmark is cutting of 1 mm-thick steel sheets with 100 m/min at 4 kW laser beam power.

The setup and operation of such processes requires comprehensive process know-how, which has to be incorporated into the machine control. Cognition is the key requirement of future systems. This will be managed by imaging systems, intelligent meta-model assisted data processing and closed-loop parameter actuation in self-optimizing laser cutting machines – a big challenge for a “mature” laser application in the new decade. ■

*Dirk Petring is Group Manager Macro-Joining & Cutting at Fraunhofer ILT in Aachen, Germany.*

## MEET LIA'S 2011 PRESIDENT AND BOARD OF DIRECTORS

Stephen Capp is the Laser Institute of America's (LIA) 2011 president. Capp graduated from the Milwaukee School of Engineering in 1978 with degrees in electrical power engineering technology and industrial management. It didn't take him long to put this education to good use.

"After a short career as an engineer working for a defense contractor, I started in the laser industry in 1979 when my father and I started Laserge. In the beginning, I did everything from laser repair to running the product on the laser prior to taking on a management role as the company grew," he said.

Today, Capp is CEO of Laserge Technology Corporation and has worked in the laser industry for over 30 years. Laserge, based in Waukegan, Ill., is an international supplier of laser-processed materials and is now one of the largest laser job shops in the U.S. Laserge, an ISO 9001-2008 and ISO 13485 registered company, specializes in cutting, drilling and welding of a wide variety of materials.

"We currently have about 150 people operating 70 lasers of many different types, and the largest growing market for the company is the medical device industry."

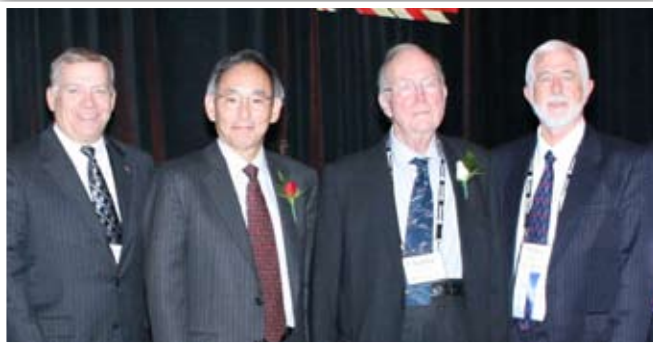
### LIA INVOLVEMENT & GOALS

Stephen Capp has been a member of the LIA since 1992 and was the 2010 president elect, served several terms as treasurer and has been a member of the board of directors for over 10 years.

"LIA is an organization of which I am very happy to be a part. The LIA needs people who are willing to step up and give of their time to advance the organization's cause for the good of the whole laser industry. I had served several years as a member of the executive committee and felt I understood the organization and wanted to continue to do what I could to contribute toward its success," he answered about his impetus to become president.

Capp has a few large tasks he is undertaking during his term as LIA 2011 president.

"During my term I plan to work closely with Peter Baker (LIA executive director) and staff with the goal of moving the LIA back to the success it had enjoyed prior to this recession.



From left, LIA President Stephen Capp, 2010 Schawlow Award Winner Steven Chu, 2010 Lifetime Achievement Award Winner Charles Townes and LIA Executive Director Peter Baker at ICALEO 2010.

"It is also my goal during my term as president to see the successful launch of the new Lasers in Manufacturing Event (LME) that will be held in September in Chicago," he said.

The mission of LIA's LME is to provide a one-stop event for companies interested in integrating laser technology into their production. Attendees will learn about automation equipment, laser choices, beam delivery, safety considerations, applications development and meet exhibitors that supply these products & services. LME will be the place in the United States to see the latest in laser technology, network with the industry's elite and find solutions to current and future manufacturing needs.

Although Capp runs a company and an international society, he still finds time for other pursuits. Married for over 30 years with two grown children, his son lives and works in the Washington D.C. area with his new wife, and his daughter is attending graduate school in Chicago. On the side Capp enjoys fly-in fishing in Canada and sailing on the Great Lakes with his wife Carol. Here's wishing Stephen Capp a successful year as LIA president.

### EXECUTIVE COMMITTEE

**President Elect Reinhart Poprawe** received a M.A. in physics from California State University in Fresno in 1977. After completion of his Ph.D. in physics (Darmstadt, 1984) he joined the Fraunhofer Institute for Laser Technology in Aachen, Germany where he worked as head of a department for laser-oriented process development. Since 1996 he has been managing director of the Fraunhofer Institute for Laser Technology and holds the University Chair for Laser Technology at the RWTH Aachen. Currently he is a member of the board on the AKL Arbeitskreis Lasertechnik e. V. Aachen. In 2006 he became fellow of the LIA and has been an LIA board member since 2001. He also chairs the RWTH-International Board and is the Rectors delegate for China.



**Treasurer Yongfeng Lu** is currently the Lott Chair Professor of Engineering at the University of Nebraska Lincoln. Lu received his BEng degree from Tsinghua University (China), M.Sc. and Ph.D. degrees from Osaka University (Japan) in 1984, 1988, and 1991 respectively. Besides the fundamental research work that led to a large number of publications and a number of national and international awards, he also has successfully developed a number of laser-based material processing technologies and commercialized them in industries. In the past few years, he received around \$10 million of research funding from DoD, NSF, DOE, NRI, private foundations and industry, including a MURI grant from ONR. He served as the general chair for ICALEO in 2007 and 2008.





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**Secretary Klaus Löffler** graduated from the University of Stuttgart with a master's in mechanical engineering. Since 2009 he is responsible for the strategic industry development for the TRUMPF Laser und Systemtechnik. In 2004 he founded the Automotive Laser Conference in Wolfsburg, Germany, which together with ALAW and JALAW builds a global conference partnership. In 2006 he took over international sales at TRUMPF Lasers and Systems and in 2007 became an LIA board member. He serves on the board of the SLT conference and other events with the goal to ensure the global growth of laser technology.



**Immediate Past President Nathaniel Quick** is a fellow of LIA and president and chief technical officer of AppliCote Associates, LLC, Orlando, Fla., a technology development company and CTO of Inflect, LC, a technology licensing firm. AppliCote Associates collaborates with academic institutes, including the University of Central Florida/CREOL. Quick has a Ph.D. from Cornell University in materials science and engineering and is a UCF Florida Photonics Center of Excellence advisory board member, UCF Industrial Advisory Committee member, a fellow of the African Scientific Institute, a past guest researcher at NIST and past member of the Army Science Board. He currently holds 39 U.S. patents and has over 60 publications.



## 2011-13 BOARD OF DIRECTORS

**Eckhard Beyer** is the executive director of the Fraunhofer Institute for Material and Beam Technology IWS in Dresden/Germany, which engages in application-oriented research and development in the area of laser and surface technology. He is full professor for laser and surface technology, executive director of the Institute of Surface and Manufacturing Technology and dean of the faculty of mechanical engineering at the Dresden University of Technology. He graduated from the University of Technology Darmstadt with a degree in physics and received a Ph.D. in physical engineering. Beyer has been engaged in the organization and chairing of several international conferences, such as ICALEO® and LIM. He is author of approximately 400 publications and owner of about 65 patents.



**Ken Dzurko** is general manager of SPI Lasers LLC, Santa Clara, Calif., and is responsible for the company's business in the Americas. A U.K.-based company, Dzurko joined SPI Lasers in 2007 and manages sales, service and applications personnel based in the U.S. The Santa Clara office provides laser applications support to customers worldwide and collaborates with various academic and development institutions. He earned his Ph.D. from USC in 1989 and has worked with diode and fiber lasers and associated optical devices in different applications.



**Richard Harvey** received his DrPH from the University of Michigan (2002) in radiological health then accepted a position at Roswell Park Cancer Institute (RPCI) where he is now director of radiation and laser safety. He is responsible for the safe use of lasers in research, medicine and education and developed a laser safety program from the ground up. He is a certified CMLSO and CLSO and a certified and licensed health and medical physicist in New York. Harvey is an assistant professor in nuclear medicine and physiology and biophysics at the University of Buffalo. He is a member of the ANSI SSC-3 committee for laser safety in health care.



**Markus Kogel-Hollacher** began in the laser industry working for his M.S. degree at the Fraunhofer Institute for Laser Technology in 1994. After earning his degree in physics from the RWTH Aachen University in Germany, he joined Precitec Optronik GmbH in Rodgau, Germany continuing with an emphasis on transferring R&D results to industrial solutions. In his position as head of the R&D department projects in the Precitec Group, he oversees national and international governmentally-funded projects. In 2008 he obtained his Ph.D. from the Technical University of Berlin, Germany.



**David Krattley** is the vice president of sales for Preco Inc.'s Laser Equipment Division (metals markets) in Somerset, Wis. He started at Preco (formerly Laser Machining Inc.) in 1989 after graduating from the University of St. Thomas. Currently, Krattley is directing application development with the latest in fiber and diode-based laser sources. He also consults on areas to focus and has done several projects with graduating seniors at the university's laser program. He has been actively attending, chairing and presenting papers at various laser related seminars for the past 20 years.



**William Lawson, P.E.**, founded NewTech Development, Somerset, Wis., in 2005 to focus on helping emerging market high technology companies develop and implement strategies for growth. From 2002-05 he was chief technology officer for Preco Laser Systems of Somerset. Before 2002 he was the majority owner of Laser Machining, Inc. (LMI), which he started in 1978 with one 50 W CO2 laser. When it was sold, LMI had grown to having over 35 industrial lasers and 225 employees serving multiple industrial markets by merging two laser businesses, an advanced processing job shop with custom systems manufacturing. He holds a bachelor's degree in mechanical engineering from the University of Wisconsin-Madison and has completed substantial additional course work in mechanical engineering, electronics and material science at the University of Minnesota-Minneapolis. He has served the LIA as a director, treasurer in 1999, president-elect in 2002 and president in 2003.



**Juan Pou** (Ind.Eng., MSc., Ph.D.) holds a chair of applied physics at the University of Vigo in Spain. He began to work with lasers in 1985 as a student and helped to develop from scratch the larger laser materials processing research group in Spain. He is now the leader of that group and director of the Research Center for Advanced Industrial Technologies and Processes, also in Vigo. At present he is involved in the development of innovative processes such



as writing micrometric metallic lines by laser micro-cladding and laser spinning of bioglass nanowires for bone recovery. He is author or co-author of more than 90 papers in scientific journals, 100 conference papers and has been awarded 15 patents. Pou is a regular presenter and chairman at ICALEO and PICALO and has served on the LMP ICALEO Committee several years.

**Robert Thomas** received his B.S. degree in physics from Pittsburg State University, Pittsburg, KS in 1989 and his Ph.D. in physics from the University of Missouri--Columbia in 1994. He has worked in the fields of spectroscopy for strained-layer semiconductor heterostructures while a student, and more recently in the areas of experimental and theoretical biomedical optics with the USAF Research Laboratory at Brooks City-Base,



Texas. From 1996 to 2002 he served as a research physicist in industry with TASC and Northrop-Grumman Corporation. In 2002 he joined the USAF Research Laboratory where he holds the title of Principal Research Physicist. He has authored and co-authored more than 25 peer-reviewed papers and more than 50 contributed papers in the areas of laser-tissue interactions, tissue optics, computer simulation and laser safety exposure limit definitions. In 2007 Thomas was named a fellow of the LIA.

**John Tyrer** was awarded his Ph.D. (1990) for his work on the application of pulsed lasers to speckle and holographic interferometers. After working in the automobile industry as an experimental test engineer/designer, he was appointed as senior lecturer to the Department of Mechanical Engineering at Loughborough University in 1988 with research interests in optical metrology, higher power lasers and laser safety. In



1996, Tyrer established a university spinout company, Laser Optical Engineering, to take licensed products to the marketplace. The company currently employs 12 people and produces laser safety equipment, diffractive optics for high power lasers and instruments. Tyrer has published over 100 journal papers and currently has 12 patents and two pending, is presently an advisor to various U.K. government agencies and is a fellow of the LIA. He is a regular presenter and chairman at ICALEO and ILSC, and was conference chair for ILSC 2007.

**Steven Weiss** is one of the founders and primary owners of Innovative Laser Technologies, Inc (ILT) in Minneapolis, Minn. Weiss started his career as a special machine designer in the early 1980s. He has over 15 years of experience in laser industry where he designed the Laserdyne 890, but in April 1998, Weiss and his partners got together and formed ILT. Since its inception, ILT has sold and installed over 240 laser workstations in many of the



different laser markets worldwide. Steve's primary responsibility started out in designing many of the laser workstations. He has also held the role of project manager and led the outside sales effort for many years. His current position is in the Business Development Group and he is the treasurer on ILT's Board of Directors. ■

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# CUTTING EDGE INFORMATION AT ILSC

The world's leading conference on laser safety will be held Mar. 14-17, 2011 in San Jose, California.

Presented by LIA, the International Laser Safety Conference (ILSC®) is a comprehensive four-day conference covering all aspects of laser safety practice and hazard control. Laser safety experts from around the world will descend on San Jose to discuss and define the latest changes to regulations and also common practices in the field. Being held March 14-17, 2011 in San Jose, Calif., scientific sessions will address developments in regulatory, mandatory and voluntary safety standards for laser products and for laser use.

The conference features laser safety scientific sessions, awards and "hot topic" luncheons, the Technical Practical Applications Seminars (PAS) and new for 2011, the Medical Practical Applications Seminar has been added to include the medical community.

"ILSC is the pinnacle of laser safety meetings. The conference has evolved to include two tracks that significantly benefit the laser safety community. The first track is the Laser Safety Scientific Sessions (LSSS). These are technical sessions with presentations by recognized worldwide experts in a variety of fields relevant to the cutting edge in laser safety. This is the traditional conference content as organized in previous ILSC conferences," explained Conference Chair Benjamin Rockwell of Air Force Research Laboratory, Brooks City-Base, Texas.

"The second track is the Practical Applications Seminars, now with both technical laser safety and medical laser safety components. These PAS sessions have grown into a favorite of the working laser safety officer, with relevant discussions about the day-to-day challenges they face. As new and novel laser



applications push the envelope of modern technology, protection of personnel from complex laser hazards is paramount to assuring success."

PAS is a two-day seminar for the practicing laser safety officer (LSO). This seminar will be particularly useful for laser safety officers (LSO) who are not full-time laser safety professionals.

Participants will be involved in panel discussions and hot topics addressing the more common safety issues and concerns of the day-to-day operations in commercial, factory, research and medical facility settings. Topics include laser safety in the workplace, how to determine nominal hazard zones (NHZ) and answers questions such as what LEP should be selected, what control measures are mandatory and what regulations apply.

The Medical Practical Applications Seminar is a two-day seminar for medical laser safety officers (MLSOs). This seminar will be particularly useful for MLSOs who work in operating rooms, surgical centers, aesthetic clinics and medical spas. Topics include plume hazards, hazards of airway passage, accidents in the operating room, regulations/litigation, setting up a safety program for the O.R. and eyewear and curtains/barriers.

## PLENARY SESSION

The ILSC Opening Plenary Session, "Lasers and You," will feature two exciting presentations relating to laser safety hot topics. Dr. Kay Ball will be presenting "Lasers in Health Care Today." Ball is a nurse consultant and educator at K&D Medical, Inc. and an associate professor at Otterbein University. The second presentation will also feature a significant issue in laser safety today. Both speakers will bring critical information to all laser safety professionals and will address the current relevant topics for all ILSC attendees.

## NETWORKING OPPORTUNITIES

In addition to the exciting educational opportunities, ILSC also provides plenty of chances for attendees to network with their peers – from the Welcome Reception and the Sponsor Reception to the "Hot Topic" Luncheon and Awards Luncheon featuring the George M. Wilkening Award Presentation and the R. James Rockwell Educational Achievement Award Presentation.

"At ILSC 2011, the technologist and safety professional will acquire new skills and sharpen current processes to ensure their organization is up-to-date on laser safety. Come and join us and rub shoulders with laser safety professionals from throughout the world as we tackle your biggest concerns," said Rockwell.

ILSC is the premier gathering of laser safety professionals – there is nothing else like it. Professionals in all fields and applications will find ILSC 2011 a tremendous source for information and networking opportunities. For more information and to download the Advance Program, visit [www.laserinstitute.org/ilsc](http://www.laserinstitute.org/ilsc). Don't miss it! ■

## EXAM OPPORTUNITIES AT ILSC

The BLS (Board of Laser Safety®) Certified Laser Safety Officer (CLSO®) and Certified Medical Laser Safety Officer (CMLSO®) exams will be offered on Sunday, March 13, 2011 in San Jose, Calif. in conjunction with LIA's International Laser Safety Conference (ILSC®). The CLSO exam is intended for professionals who are working with lasers in a scientific, manufacturing or industrial environment. The CMLSO exam is intended for professionals who are working with lasers in any medical environment.

There are two steps in becoming certified. First, an individual must provide information demonstrating he or she meets certain educational prerequisites and work experience. Second, the individual must pass an examination demonstrating his/her knowledge in the area of laser safety.

Certification and certification maintenance will identify and distinguish laser safety officers among those involved in laser safety practices. For more information and to register, visit [www.lasersafety.org](http://www.lasersafety.org) or e-mail [bsams@lasersafety.org](mailto:bsams@lasersafety.org).

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## “LIGHT APPLIED” AT LASER WORLD OF PHOTONICS MUNICH

Industry marketplace, think tank, knowledge forum, source of momentum, solution suppliers, networking – LASER World of PHOTONICS has it all! Being held in Munich May 23-26, 2011, the conference is home to the global laser and photonics industry. Thanks to its consistent orientation to applications in practice and research, it presents technology in direct combination with industrial application sectors for the widest variety of industries and uses. The fair’s new motto, “Light Applied,” also emphasizes that aspect. It is a concept that has appealed to the industry for 20 years. During this twentieth fair, all market leaders, decision-makers and users form a closely-knit community that generates key momentum for one of the most innovative industries in the world.

More than 1,000 exhibitors and 26,000 trade visitors are expected to attend LASER World of PHOTONICS 2011. Besides its traditional sectors for lasers and optronics, optics, imaging and optical measuring technology, the fair will revolve around three new themes in 2011 – lasers and laser systems for manufacturing, green photonics and biophotonics and life sciences.

### CONFERENCES AND SHOWS

Lasers and laser systems for manufacturing has always been one of the largest sectors for lasers. In addition to some 220 exhibitors, the fair features a “Lasers In Manufacturing” conference that deals with topics such as macro- and micro-processing. A special show titled “Photons in Production,” the slogan of which is “Green Solutions,” will feature demonstrations of solutions for rapid manufacturing using lightweight materials as well as welding and milling of various materials. Finally, a number of application panels on the use of lasers in photovoltaics manufacturing, micro-technical laser applications in electronics and applications for ultrashort-pulse lasers will be held.

The topic of green photonics will examine potential solutions in the photonics sector, which uses its technologies to make an

important contribution to the energy-saving generation and efficient use of light. Exhibits will include solutions related to photovoltaics, lighting and the use of renewable energy sources, energy efficiency and environmental protection. This focal point will be rounded out by application panels on topics such as “Solid State Lighting.”

A number of innovations in medicine and the life sciences would be inconceivable without optical technologies. As one of the most important sectors of the future, this focal point will include applications, techniques and processes in biophotonics. Exhibits will be rounded out by lectures, which are part of the European Conference on Biomedical Optics, and by application panels in the exhibition forum.

## World OF Photonics Congress 2011

For the first time, the fair will also feature products and applications in the sector for security and defense. Manufacturers will present products and solutions for use in aviation and aerospace as well as for traffic and transportation, defense technology and astronomy. Whether it comes to terahertz technology, biometric techniques, thermal-imaging cameras, night-vision equipment, head-up displays, finger-print analysis, explosives detectors or warning systems – optical technologies also have a great deal of influence on this sector.

### WORLD OF PHOTONICS CONGRESS

As always, the World of Photonics Congress, which covers the entire spectrum of optical technologies and is the most important congress for photonics in all of Europe, is being held at the same time as the fair. It serves as an international networking platform and brings together six conferences that are organized by leading international organizations under a single roof. The Optofluidics Conference is new in 2011. Besides the lectures, which tend to have a more scientific slant, the program of events at the World of Photonics Congress also includes a series of application-oriented lectures that bridge the gap between theory and practice. The lectures deal with the latest trends such as production optimization, energy, healthcare and security and focus on potential solutions in the entire sector for optical technologies.

LASER World of PHOTONICS is a home base for the industry and your customers. The best evidence of that fact is the large share of participants who return to the fair and the fact that they are so satisfied. All in all, optical technologies are a pacemaker for the global economy. Visit [www.munich-tradefairs.com](http://www.munich-tradefairs.com) for more information . ■



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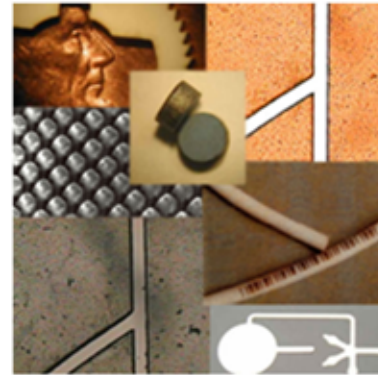


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## CORPORATE MEMBER PROFILE

## NORTHROP GRUMMAN CUTTING EDGE OPTRONICS

LIA Corporate Member Northrop Grumman Cutting Edge Optronics (CEO) is a leading provider of high-power laser diodes, high-power pump modules and DPSS lasers. The company, located in Saint Charles, Missouri, is a vertically integrated manufacturer capable of supplying unmounted diode bars, packaged laser diodes, DPSS modules, laser diode drivers and complete DPSS laser systems. Their diode laser-based products have become industry standards and are used in a wide variety of commercial and military applications.

### COMPANY BACKGROUND

CEO was founded in 1992 by a core team of solid-state laser scientists and engineers who came from the McDonnell Douglas Aircraft Company's (MDAC) Solid State Laser group based in St. Louis, Missouri. At that time, in addition to being world renowned for solid-state laser development, MDAC was also a pioneer and the world's largest developer and manufacturer of laser diodes and diode arrays.

When MDAC divested its solid-state laser business in the early 1990s, a large pool of available engineering and scientific talent was created in the St. Louis area. CEO attracted that technical talent and used it to build a highly experienced engineering and manufacturing team with backgrounds in epitaxial wafer design,

**NORTHROP GRUMMAN**

laser diode packing and the design of ruggedized diode-pumped solid-state laser systems. During its early years as a private company, CEO leveraged its technical and manufacturing expertise to build its reputation as an OEM manufacturer of laser diodes, diode array packages, diode-pumped laser gain modules and custom military, industrial and commercial laser systems.

In 2000, seeing CEO's engineering and manufacturing capabilities as a good fit with its high-power laser group in Redondo Beach, California, TRW purchased CEO. TRW expanded and upgraded CEO's manufacturing facility to accommodate the development of high-powered laser diode arrays as well as high-power solid-state laser systems that were under development at TRW.

Also in 2002, Northrop Grumman purchased TRW, thus

acquiring CEO. CEO was brought into the Aerospace Systems sector of Northrop Grumman. As part of Northrop Grumman, CEO has become the key supplier of critical laser diode arrays and laser system hardware to several major Northrop Grumman directed energy, LIDAR and range finder/designator laser programs. NGAS-CEO has also continued to grow as a leading supplier of these laser technologies in the commercial and industrial markets.

### TODAY'S CAPABILITIES

From its inception, CEO has focused on the core technologies and disciplines that are crucial to high-performance solid-state laser systems: laser diodes, gain materials, pumping geometries, optical design, control electronics and system engineering. CEO has developed a vertically integrated manufacturing environment and understands that the interdependencies of these core laser technologies are the key to designing and building successful laser systems. While there are other companies that manufacture laser diodes, and still other companies that build solid-state laser systems, there are few that do both. Not only does CEO do both, but all manufacturing is accomplished in its 36,000 square foot, ISO 9001-2008 certified, St. Charles facility. As a result, CEO is one of the last laser manufacturers to design and build 100% of its products within the United States.

Today, CEO has become an industry leader with over 20 key patents focused on laser diode array packaging. CEO's extensive capabilities at numerous wavelengths has led to the development of diode-pumped solid-state lasers utilizing multiple gain media such as Nd:YAG, Nd:YLF, Nd:YVO, Er:YAG and Er:GLASS. As a result, CEO has high performance laser systems operating all over the world in a wide variety of military, industrial and commercial applications and operating environments.

For more information, visit [www.as.northropgrumman.com/ceolaser](http://www.as.northropgrumman.com/ceolaser). ■



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## *Non-Ionizing Radiation*

This course uses hands-on demonstrations to provide an introduction to non-ionizing radiation, broadband ultraviolet radiation (UVR), laser radiation, broadband radio-frequency radiation (RFR), and extremely low frequency (ELF) electric and magnetic fields.

## *Aesthetic Laser Safety Officer*

This course introduces the fundamental concepts of laser & light technology and safety for professionals working with and responsible for Class 3B and Class 4 medical lasers in the cosmetic/aesthetic field. First Aid, CPR and AED certification will be provided as part of the course curriculum.

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# JLA GOES PAPERLESS

The following editorial appeared in the November issue of the JLA.



Dear LIA members, friends and colleagues, readers,

What you have in your hands is a historical document. This is the last printed issue of the *Journal of Laser Applications*<sup>®</sup> (JLA). For so many years we have been used to receiving the blue news of laser applications, it will take a while to get used to the new all-electronic form. But, as we require the ability to change from our environment every day, I am sure all of you take regular views in the mirror and keep practicing and improving the process yourself, so it will be very easy to scan the JLA-page (<http://jla.aip.org>) and print or forward the links

and articles directly to your staff and colleagues. We took an important step towards better efficiency and effectiveness in terms of documentation and communication, a step towards a better laser community. Probably the most important boost, however, is not expected in shorter review times or more efficient processes, but in the quality of our *Journal*. Higher citation indexes of the articles and a significantly higher impact factor of the *Journal* are expected from the innovation. The team is set: eight volunteering scientists managing corresponding categories of the *Journal* and myself form the editorial board and are committed to serve LIA at their best.

In detail:

1. High Precision Materials Processing with Ultrafast Lasers; Andreas Ostendorf
2. Laser Additive Manufacturing; Milan Brandt
3. High Power Materials Processing with High Brightness Lasers; Eckhard Beyer
4. Emerging Applications of New Wavelengths and Temporal Pulse Shaping; Martin Richardson
5. Surface Modification; Minlin Zhong
6. Lasers in Nanomanufacturing/Nanophotonics & Thin Film Technology; Yongfeng Lu
7. Spectroscopy/Diagnostics/Measurements; Dave Farson
8. Safety; Dave Sliney

We look forward to the new year and trust we are on the right track to improve not only our laser community, but in consequence, our whole society. Solutions for the grand global challenges like energy, mobility, health, environment and climate should be direct results of our work. With very best wishes for a healthy, prosperous and happy new year!

Sincerely yours,

*Reinhart Poprawe, Editor, JLA*



**Andreas Ostendorf**



**Milan Brandt**



**Minlin Zhong**



**Yongfeng Lu**



**Eckhard Beyer**



**Martin Richardson**



**Dave Farson**



**David Sliney**

## JLA UPDATE

The *Journal of Laser Application*<sup>®</sup> offers the latest refereed papers by leading researchers in the laser community. Visit <http://jla.aip.org> to access the online version. To view the journal online, please make sure your membership is current.

The JLA is published four times a year by the LIA in February, May, August and November. It is available electronically (beginning with the February 2011 issue) to LIA members as a member benefit. For non-members of LIA, call the American Institute of Physics at 1-800-344-6902 for subscription information. To receive your JLA table of content e-mail alerts, sign up at [http://lia.aip.org/alerting\\_services/toc\\_alerts](http://lia.aip.org/alerting_services/toc_alerts).

# BLS UPDATE

At the end of 2010, some CLSO®s and CMLSO®s were struggling to come up with the 10 certification maintenance (CM) points required for recertification. Often opportunities to earn CM points are overlooked. The fact is, once an event is over there is no way to go back in time to attend.

One such opportunity is the International Laser Safety Conference (ILSC®), which will be held in San Jose, California the week of March 14-17, 2011. ILSC is so much more than just listening to world-renowned laser safety experts, who will be presenting papers relevant to how today's technology affects laser safety considerations. In addition to updates on safety standards, laser safety training, practical hazard and risk control, bioeffects; you can listen to presentations in the first-ever non-laser optical sources session.

The Practical Applications Seminar (PAS) portion of the conference was developed with the working laser safety officer in mind. This year, PAS has been expanded to include medical applications. A dynamic team of experts, with various medical laser experience and knowledge, have put together an exciting program that will benefit participants regardless of experience level or specialty. The technical (non-medical) PAS sessions



consists of topics such as audience scanning at laser light shows, laser safety in the workplace and the expected effects of different lasers.

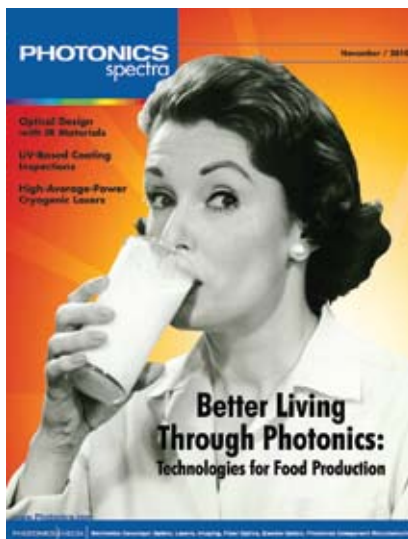
Networking opportunities abound at ILSC. This is the place to make new contacts and catch up with old friends and colleagues. ILSC social events provide time to connect with other attendees, as well as event sponsors, in a relaxed atmosphere.

Join us at ILSC in March. In addition to the aforementioned continuing education and experience gained by participating, earn up to four CM points for attending. Register today at [www.laserinstitute.org/store/conf/ilsc2011](http://www.laserinstitute.org/store/conf/ilsc2011).

## REMINDER

A note to those whose CM cycle ended December 31, 2010, it is not too late to restore your active status. CM worksheets accompanied with the appropriate recertification and late fees will be accepted until May 31, 2011.

If you have any questions about the BLS or the recertification process, please contact Jennifer Craft at [jcraft@lasersafety.org](mailto:jcraft@lasersafety.org) or Barbara Sams at [bsams@lasersafety.org](mailto:bsams@lasersafety.org), or call 407-380-1553. ■



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# ASC Z136 UPDATE

As reported previously, the ASC Z136 annual meeting will be held on Sunday, March 13, 2011 in conjunction with the International Laser Safety Conference (ILSC®) at the Doubletree Hotel San Jose in San Jose, Calif. The meeting is scheduled to begin at 9 a.m. local time. Members who will be attending ILSC are encouraged to check in early (8 a.m.) to receive their conference materials.

In addition to the annual meeting, several ancillary meetings relating to the development of national and international laser

safety standards will take place during the week. The meetings include working groups of IEC TC76 and ASC Z136 standards and technical subcommittees.

Meeting rooms will be posted onsite. For specific meeting details, please contact the working group/subcommittee chairperson directly.

Meeting space is still available on a first-come, first-served basis. To schedule a meeting during ILSC, please contact Barbara Sams at bsams@laserinstitute.org or call 407-380-1553. ■



## ANCILLARY MEETINGS SCHEDULE

Day – Date	Time	Committee	Contact
Monday, 14Mar	1pm–5pm	IEC TC76 WG5	Bill Rothwell
	3:30pm–5pm	TSC-1	Bruce Stuck
Tuesday, 15Mar	8am–noon	SSC-10	Jay Parkinson
	12:30pm-1:30pm	SSC-8	Ken Barat
Wednesday, 16Mar	3pm-5pm	TSC-4	Bill Ertle
Friday, 18Mar	8am – 5pm	IEC TC76 WG1	David Sliney, Karl Schulmeister

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## TOOLS OF THE LASER SAFETY TRADE

### CONTROLLING THE BEAM PART 3

In the last two articles we discussed how to control the beam from escaping out through entryways and windows. Let's move inside the room. When working with lasers on an optical table, controlling the beam from reflecting in a direction that could injure someone is vital. The first tool, the bench guard, is simple in design and effective. The bench guard is sometimes called a beam stop, beam baffle or bench block. Whatever you call them, the result is the same, the beam will be stopped. Bench guards are usually made of flat black anodized metal or a darkened polycarbonate. Fastening them along the edge of the optical table to create a wall will keep the beam within the perimeter of the bench.

The second tool is a beam dump, which is sometimes called a beam trap. Beam dumps can be small in size to handle medium powered lasers to very large in size in order to handle high powered lasers. They work by trapping the laser beam with infinitely inward reflecting designs, hence the name beam trap. The larger beam dumps trap the energy from the beam and will tend to heat up. Therefore they are air-cooled or water-cooled to reduce the heat build-up.

The last tool is a laser shutter. The laser shutter is a device that is placed directly in the path of the beam to automatically or manually shut the beam down quickly. Automatic shutters can be interlocked to an entryway door and will be activated when the door is opened. Used in combination with each other, these three tools will help you confine the beam to the perimeter of the optical table or work surface. ■

## WELCOME NEW & RENEWING CORPORATE MEMBERS

- Huffman Corporation, Clover, SC
- Therma-Tru, Edgerton, OH
- University of Windsor, Windsor, ON, Canada

For a complete list of corporate members, visit our corporate directory at [www.laserinstitute.org/membership](http://www.laserinstitute.org/membership).

Kentek presents the  
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This goggle fits comfortably when worn alone or over vision-correcting glasses. The polycarbonate 11-base wrap lens is optically correct and offers an extremely wide, unobstructed viewing area with superb peripheral vision. The soft elastomer seal with indirect vents provides excellent airflow to enable wearing the goggle for extended periods of time.

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# MEMBER INNOVATIONS

## NEW Q-SWITCHED DPSS LASER

Spectra-Physics®, Santa Clara, Calif., a Newport Corporation Brand, has introduced the world's first, 5 Watt, all-in-one green Q-switched diode-pumped solid-state (DPSS) laser that combines the laser head and electronics into a single, compact package that fits in the palm of your hand. The Explorer® XP 532-5 laser features the industry's smallest footprint with air-cooled design, offering exceptional thermal management of less than 100 W under normal operating conditions. The lightweight package (less than 3 kg) makes it easy to integrate into machine tools and ideal for use on moving gantries in solar cell, LED and microelectronics manufacturing and laser-marking applications. For more information, visit [www.newport.com/Explorer-XP](http://www.newport.com/Explorer-XP).

## NEWPORT'S INSTRUMENT MANAGEMENT SOFTWARE PLATFORM

Newport Corporation, Irvine, Calif., has introduced NSTRUCT™, an enhanced instrument management software platform created to simplify installation and to provide quicker and simpler instrument and experiment setup and use. Flexible and scalable, the instrument manager is designed with a set of features that create an effective single point control for all the users' instrument needs. The NSTRUCT advanced communication layer provides a stable operating environment, even when using a multitude of instruments in both Windows 7 and XP. For more information, visit [www.newport.com](http://www.newport.com).

## COHERENT LAUNCHES COMPACT CUBE LASERS

Coherent Inc., Santa Clara, Calif., has expanded its CUBE family of CW, visible diode laser modules with three new wavelengths: 488 nm (50 mW), 685 nm (40 mW) and 730 nm (30 mW). The compact CUBE laser heads measure only 100 x 40 x 40 mm (3.9" x 1.6" x 1.6") making them ideal for integration into instrumentation used for life sciences, metrology and inspection applications. Additionally, all three new models are available with CDRH safety accessories enabling standalone operation in laboratory settings. Because they use direct diode technology, CUBE lasers offer compelling advantages over other solid state, CW, visible laser technologies, and they deliver an order of magnitude improvement in electrical efficiency (and compactness) over legacy ion lasers.

Also from Coherent is the Verdi G8, the highest power, 532 nm, scientific-grade laser based on the company's unique optically-pumped semiconductor laser (OPSL) technology. With 8 Watts of output, this laser provides a next-generation solution for pumping titanium:sapphire-based ultrafast laser oscillators in applications such as spectroscopy, pump-probe dynamics and materials research. For more information, visit [www.coherent.com](http://www.coherent.com).

## OPHIR'S SOFTWARE ADDS SUPPORT

Ophir Laser Measurement Group, Logan, Utah, has introduced a new version of StarLab laser measurement software that

converts a PC into a multi-channel laser power/energy station. The newest edition incorporates Microsoft® COM object technology, a programming language-neutral way of implementing objects across applications, even across machine boundaries. Ophir's COM Object is used by developers to create reusable software components and to link these components together to build applications. This allows system integrators and OEMs to quickly and easily create applications that use laser measurement objects without having to know how the objects were built. For more information, visit [www.ophiropt.com/laser-measurement](http://www.ophiropt.com/laser-measurement).

## NEW PICO-SECOND LASERS AVAILABLE

Photonics Industries, Bohemia, New York, has introduced the next generation of picosecond lasers providing the highest pulse energy diode pumped pico-second lasers commercially available. According to the company, Photonics Industries' RG Series is the most compact, the highest pulse energy diode pumped pico-second laser in kHz range on the market. Aimed at the industrial market, the series produces >7.5 mJ per pulse at 1 kHz at 1064 nm with <25 ps nominal pulse widths still maintaining TEM00 mode quality and <2% rms pulse-to-pulse instability. Higher power versions (30 W and 45 W @ 1 MHz) as well as harmonic output wavelengths, such as 532 nm, 355 nm, and 266 nm, are also available. For more information, visit [www.photonix.com](http://www.photonix.com). ■

## MEMBERS IN MOTION

### HAPPY BIRTHDAY SPECTRA-PHYSICS

Spectra-Physics®, Santa Clara, Calif., a Newport Corporation Brand, is celebrating 50 years of pioneering new laser technologies, products and solutions for industry and science. Notably, the company became the first commercial laser company in 1961, less than a year after the invention of the laser. Spectra-Physics will begin the celebration of this milestone year in January.

"We are proud to announce our 50th year as the catalyst for the laser industry, innovating numerous 'firsts' in breakthrough laser technologies," says Dave Allen, vice president and general manager of Spectra-Physics. "We look forward to continuing to partner with our customers to deliver leading laser products and solutions that enable new applications and satisfy the expanding needs of our scientific and industrial communities, both today and for the next 50 years."

Kim Abair, director of global marketing for Newport Corporation, notes, "We are planning a variety of activities this coming year to celebrate all the 'firsts' in laser solutions that Spectra-Physics has introduced."

## LIA ADDS MATERIAL PROCESSING BOOK TO LIBRARY

*Laser Material Processing* (4<sup>th</sup> Edition), by William Steen and Jyotirmoy Mazumder, has recently been added to the LIA library. The informal style of *Laser Material Processing* will guide you smoothly from the basics of laser physics to the detailed treatment of all the major materials processing techniques for which lasers are now essential.

*Laser Material Processing* will be of use as university or industrial course material for senior undergraduate, graduate and non-degree technical training in optoelectronics, laser processing and advanced manufacturing. Practising engineers and technicians in these areas will also find the book an authoritative source of information on the ever-expanding use of industrial lasers in material processing. The book gives students all they need to know to gain work using lasers in an industrial environment, provides an excellent place to start for the in-depth academic study of any of the large number of laser-based techniques discussed and helps you understand how the laser works and decide which laser is best for your purposes.

New chapters on laser physics, drilling, micro- and nanomanufacturing and biomedical laser processing reflect the changes in the field since the last edition, updating and completing the range of practical knowledge about the processes possible with lasers already familiar to established users of this well-known text. It also has end-of-chapter exercises to help students assimilate information as they learn. The authors' lively presentation is supported by a number of original cartoons by Patrick Wright and Noel Ford which will bring a smile to your face and ease the learning process. Cost of *Laser Material Processing* (4<sup>th</sup> Edition) (pub #213) for LIA members is \$80 or \$90 for nonmembers. To order your copy, visit [www.laserinstitute.org/store](http://www.laserinstitute.org/store), call 1-800-34-LASER or e-mail [info@laserinstitute.org](mailto:info@laserinstitute.org).

## MLSO COURSE OFFERED AT ILSC

A Medical Laser Safety Officer (MLSO) course will be held prior to ILSC in San Jose on Mar. 12 and 13. This course is designed to give the operating room personnel a basic foundation in laser biophysics, tissue interaction and laser safety. Laser safety protocols will be addressed according to the ANSI Z136.3 *Safe Use of Lasers in Health Care Facilities* standard, AORN recommended practices, and ASLMS practices. Instruction is accomplished through didactics, and discussions. This course is worth 9.95 contact hours, and 1.5 BLS CM points. Visit [www.laserinstitute.org/education/mlso](http://www.laserinstitute.org/education/mlso) or call 1-800-34-LASER for more information or to register.

## ILSC ADVANCE PROGRAM AVAILABLE

The Advance Program is now available for the 2011 International Laser Safety Conference (ILSC), that will be held Mar. 14-17 in San Jose, Calif. ILSC is a comprehensive four-day conference covering all aspects of laser safety practice and hazard control. Scientific sessions will address developments in regulatory, mandatory and voluntary safety standards for laser

products and for laser use. Included in the Advance Program is coverage of the Medical Practical Applications Seminar, a two-day seminar for medical laser safety officers, and the Technical Practical Applications Seminar, a two-day seminar for the practicing laser safety officer. Plan your visit to this biennial LIA conference by visiting [www.laserinstitute.org/conferences/ilsc](http://www.laserinstitute.org/conferences/ilsc) to download your copy of the Advance Program now.

## LSO COURSE IN MARCH

A Laser Safety Officer (LSO) with Hazard Analysis course will be held March 21-25, 2011 in Las Vegas, Nev. This course is designed to teach the knowledge required to perform the duties of the laser safety officer as described in the ANSI Z136.1 *Safe Use of Lasers* standard. Information on lasers and optics, applications, bioeffects, beam and non-beam hazards, hazard analysis, control measures and training on laser safety program development and administration is covered. This course meets all LSO training requirements outlined by ANSI, OSHA and ACGIH. Visit [www.laserinstitute.org/education](http://www.laserinstitute.org/education) or call 1-800-34-LASER for more information or to register.

## ICALEO SPONSOR AND VENDOR OPPORTUNITIES

The 30<sup>th</sup> International Congress on Applications of Lasers & Electro-Optics (ICALEO®) will be held Oct. 23-27, 2011 in Orlando, Fla. ICALEO has a 29-year history as the conference where researchers and end-users meet to review the state-of-the-art in laser materials processing and predict where the future will lead. From its inception, ICALEO has been devoted to the field of laser materials processing and is viewed as the premier source of technical information in the field. ICALEO 2011 will include three conferences, the Laser Materials Processing Conference, the Laser Microprocessing Conference and the Nanomanufacturing Conference as well as a Poster Presentation Gallery, the Laser Solutions Short Courses, a business forum and plenty of networking opportunities.

As the world's premier conference on laser materials interaction, ICALEO attracts over 200 companies and organizations from more than 30 countries. We invite companies to take part in the Laser Industry Vendor Program, which gives vendors and conference attendees the opportunity to discuss equipment and applications in a relaxed setting. After completion of the technical sessions, attendees enjoy drinks and hors d'oeuvres while sharing product ideas with colleagues and suppliers. Space is available to experience this unique networking opportunity!

ICALEO also offers various level sponsorship opportunities. Sponsors are acknowledged in a number of ways, from on-site signage to visibility on the ICALEO website. Sponsors are also included in the Advance Program and Technical Digest, which is distributed to all attendees. To find a sponsorship that fits your company's strategy and needs or to register as a vendor, visit [www.laserinstitute.org/conferences/icaleo/sponsors\\_and\\_vendors](http://www.laserinstitute.org/conferences/icaleo/sponsors_and_vendors), e-mail [icaleo@laserinstitute.org](mailto:icaleo@laserinstitute.org) or call 1-800-34-LASER. Also be sure and check out the video testimonials from the ICALEO 2009 sponsors and vendors on the site. ■



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The 2011 International Laser Safety Conference (ILSC) is a comprehensive 4-day conference covering all aspects of laser safety practice and hazard control. Technical sessions and workshops will address developments in regulatory, mandatory and voluntary safety standards for laser products and laser use.

### Features:

- Laser Safety Exhibition Sessions
- Technical Practical Applications Seminar
- "Hot Topics" Lectures
- Awards Luncheon
- **New for 2011!** Medical Practical Applications Seminar – Even content begins with expanding cutting-edge presentations

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**March 14 - 17, 2011**

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San Jose, CA, USA**

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