



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: RESEARCH | VOLUME 18 NO. 5 | SEPT / OCT 2010

Laser's Impact on Research & Development

pg. 6

Portable Blue Laser Poses a
Hazard - pg. 8

Tools of the Laser Safety Trade -
Controlling the Beam - pg. 14



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.

2010 LIA OFFICERS

President – Nathaniel Quick

AppliCote Associates, LLC

President-Elect – Stephen Capp

Laserage Technology Corporation

Past President – Rajesh Patel

Newport - Spectra Physics

Secretary – Klaus Löffler

TRUMPF Laser & Systems GmbH

Treasurer – Yongfeng Lu

University of Nebraska, Lincoln

EDITORIAL STAFF

Editor-in-Chief – Peter Baker

Managing Editor – Kris Stell

Copy Editor – Barbara Sams

BUSINESS STAFF

Publisher – Jim Naugle

Advertising Sales – David Evans

If you are interested in advertising space in this newsletter or a subscription, contact David Evans at 407.380.1553/1.800.34.LASER or devans@laserinstitute.org.

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.

IN THIS ISSUE

FEATURES

The Laser's Impact On Research
And Development6

Portable Blue Laser Poses A
Hazard.....8

DEPARTMENTS

Calendar of Events2

Executive Director's Message5

President's Message5

Corporate Member Profile10

BLS Update.....12

ASC Z136 Update13

JLA Update13

Laser Safety Corner.....14

Laser Insights.....15

Welcome New Members16

Members In Motion.....17

Member Innovations.....18

LIA Announces19

ADVERTISERS

Board of Laser Safety.....12

Fabtech 2010.....13

Industrial Laser Solutions7

Kentek3

Laser Focus World17

Laser World of Photonics China.....16

Laservision.....9

LIA's ANSI Z136.44

LIA's Career Center.....14

LIA's ILSC[®] 2011.....20

LIA's Inhouse Training.....8

LIA's LAM Workshop 20114

LIA's MLSO Training.....9

Photomachining.....18

Photonics Spectra15

Rockwell Industries.....11

CALENDAR OF EVENTS

Laser Safety Officer Training

Dec. 7-9, 2010 | Clearwater, FL

Feb. 8-10, 2011 | Las Vegas, NV

July 12-14, 2011 | St. Louis, MO

Dec. 6-8, 2011 | Orlando, FL

Laser Safety Officer with Hazard Analysis*

Nov. 1-5, 2010 | San Antonio, TX

Jan. 24-28, 2011 | Orlando, FL

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*

Nov. 6-7, 2010 | San Diego, CA

Nov. 6-7, 2010 | Chatanooga, TN

Nov. 13-14, 2010 | Chicago, IL

Feb. 12-13, 2011 | Atlanta, GA

Mar. 12-13, 2011 | San Jose, CA

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

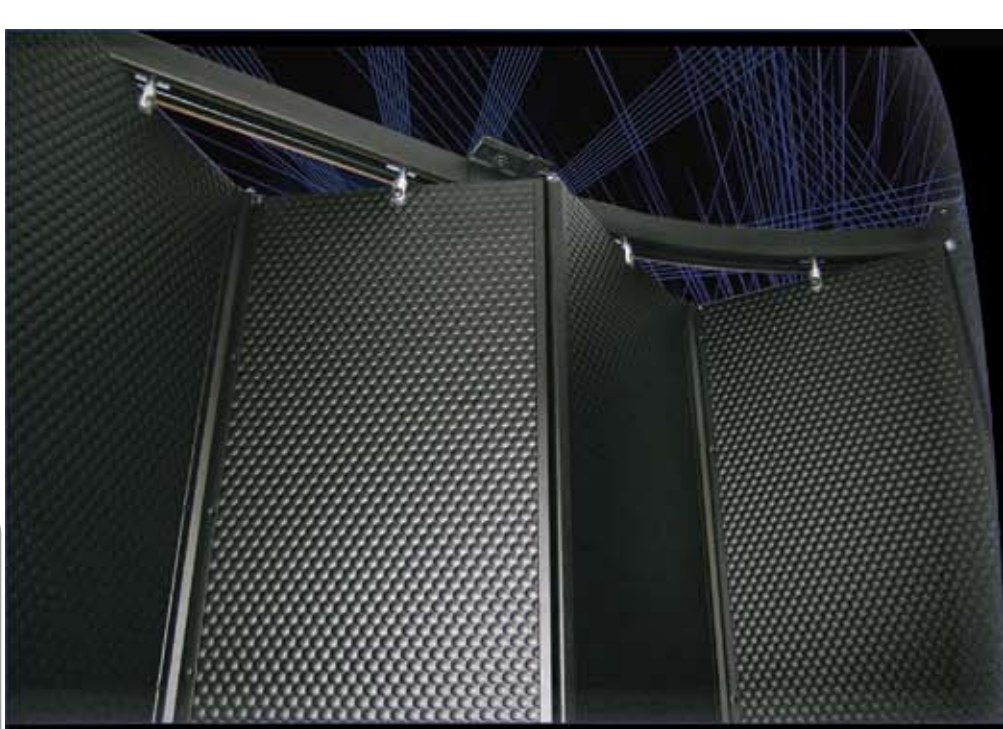
Laser Additive Manufacturing Workshop

Feb. 16-17, 2011 | Houston, TX

ILSC[®] 2011

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

Visit 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/cm² for 3 minutes. Available in stock sizes any width and height up to 8 feet. Custom sizes also available.

LASER SAFETY BARRIERS



FLEX-GUARD™ *Laser Curtains*

Flex-Guard™ heavy duty matte finish fabric is ideal for blocking diffuse and low power laser radiation. Durable and flame retardant materials are suspended from ceiling- or floor-mounted coated black steel track engineered for low-friction operation. Virtually any configuration is possible using curves, by-pass rollers and other accessories. Each system is rated up to 200W/cm² for 100 seconds and is available in stock and custom sizes.

Inquire about our laser auditing, laser safety training, and laser consulting services presented by experienced laser experts.



components accessories containment signs/labels education eyewear

Int'l: +1 603-223-4900 • Fax: 603 435-7441 – Email: info@kenteklaserstore.com • Web: www.kenteklaserstore.com

LAM

LASER ADDITIVE MANUFACTURING

WORKSHOP

February 16-17, 2011

Sheraton North Houston Hotel • Houston, TX, USA

Save The Date

This unique workshop will bring together industry specialists from around the world with the goal of applying this state-of-the-art process (cladding, sintering & rapid manufacturing) to today's manufacturing challenges.

General Chair:
Paul Denney, Lincoln Electric



Presented by:

Laser Institute of America

Laser Applications and Safety



www.laserinstitute.org/conferences • +1.407.380.1553 • lam@laserinstitute.org

Newly Revised!

ANSI Z136.4 (2010)

Laser Safety Measurements for Hazard Evaluation

800.34.LASER



Get your copy of the 2010 revision of the ANSI Z136.4 – *American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation*. The ANSI Z136.4 provides guidance for optical measurements associated with laser safety requirements. This revision of the original 2005 standard harmonizes with the revised ANSI Z136.1 – 2007 *Safe Use of Lasers* standard, parent document and cornerstone of the ANSI Z136 laser safety standards series and the foundation of laser safety programs nationwide.



Laser Institute of America

Laser Applications and Safety

13501 Ingenuity Drive, Suite 128
Orlando, FL 32826

www.laserinstitute.org | +1.407.380.1553

PRESIDENT'S MESSAGE



I am writing this message prior to the 29th International Congress on Applications of Lasers & Electro-Optics (ICALEO® 2010). I trust that all attendees accomplished their objectives and had many memorable interactions. I will summarize my thoughts on ICALEO 2010 in the next message.

A major success for LIA was achieved Sep. 7, 2010 with the receipt of a signed agreement from the American Institute of Physics (AIP) who have committed to publish the *Journal of Laser Applications*® (JLA) in agreement with our cost effective, efficiency and benefit guidelines. This initiative began two years ago involving negotiations with different publishers that did not meet our objectives; I addressed this initiative in the March president's message. We stood our ground and preserved to our desired result. Revenue projections were agreed upon and AIP editorial support has been improved and will integrate with Editor-in-Chief Professor Reinhart Poprawe and his team to improve review turnaround and our citation index. Reinhart's team will have access to AIP's Peer-X-Press online manuscript and peer review system and will customize this tool to our needs. The journal will be completely online starting January 2011 and will be free to all members.

On behalf of the membership, I congratulate Peter Baker who led the charge and the Executive Committee for resolving the final contract. We, the membership, now have the team and tools for improved publication efficiency of the JLA. Our support will be through the use of these tools.

A handwritten signature in black ink, appearing to read "Nathaniel Quick".

Nathaniel Quick
President
Laser Institute of America

EXECUTIVE DIRECTOR'S MESSAGE

Adapting to Changing Times

As part of our ongoing review of LIA's activities and commitments we have paid particular attention to using our resources in the most effective way possible. We have reduced or eliminated those efforts that were not yielding the expected benefit and redeployed them in more fruitful areas.



This summer, the LIA Board of Directors decided to discontinue our investment in the Automotive Laser Applications workshop (ALAW). We sold our 50% share in ALAW to the Fabricators and Manufacturers Association (FMA) and they will continue to run ALAW on their own. Instead, we offered a second Laser Additive Manufacturing (LAM) workshop that was very successful and we are planning to offer additional LIA events next year.

Another important item we have been working on is our *Journal of Laser Applications*® (JLA). We initially held discussions with a commercial publisher but when this did not work out we negotiated a new agreement with our current publisher, the American Institute of Physics (AIP). Consistent with current practice, JLA will become an online only publication starting in January 2011 and will, of course, continue to be free for LIA members. Working together with AIP we plan to greatly increase the number of libraries and institutions subscribing to JLA that will improve both the reach and the finances of our *Journal*.

We also expect improvement in the area of time to publish. Our editors and reviewers will be able to use Peer X-Press, AIP's online manuscript submission and peer-review system, which will facilitate a faster turnaround time for review and more timely publication of journal papers. Editor-in-Chief Reinhart Poprawe will unveil his editorial enhancements and plans for improving the citation index in the coming months. Please support this effort by submitting your best papers to your own journal, JLA!

As you can see, we are adapting to changing times and conditions by redeploying our assets for maximum effectiveness.

A handwritten signature in black ink, appearing to read "Peter Baker".

Peter Baker, Executive Director
Laser Institute of America
pbaker@laserinstitute.org

THE LASER'S IMPACT ON RESEARCH AND DEVELOPMENT

By Robin D. Lopez and Toan Q. Tran

Charles Townes was quoted saying he “knew that the laser would have a huge impact for research” at the recent LSO Workshop at Lawrence Berkeley National Laboratory (LBNL). It’s quite doubtful he foresaw the various applications the laser would have within the next 50 years after his groundbreaking work.

Of course, the potential of the laser was seen. However, its abilities and versatility is truly amazing, when one steps back and reflects on the lasers’ actual impact on research and development, currently, and in the future. We recently completed a summer internship at LBNL, witnessing firsthand what lasers are capable of and will use that experience to demonstrate the wide range of laser applications in R&D.

GRAND USES OF LASERS

There are many projects at LBNL, but the following few are the ones that particularly stood out as having high levels of interest and showing the wide range of contributions from laser technology. Examples are 3-D image mapping, audio record restoration, improving combustion flames, use as a light source mechanism to observe materials/objects and to measure shock waves. Today we can use lasers to generate “table top” optical accelerators, interaction of a laser and synchrotron beam to generate femtosecond x-ray pulses. There is also the generation of attosecond pulses, terahertz radiation and femtosecond pulse probe work that allows investigation into a wide variety of chemical reactions on the micro and nano scale.

Other projects of interest at LBNL are the second-generation Neutralized Drift Compression eXperiment (NDCX-II) and the Berkeley Lab Laser Accelerator (BELLA) project. Aside from those projects (some of which will be discussed in depth), there is also the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL), another facility we were able to visit, thanks to NIF’s LSO Jamie King and LBNL’s LSO Ken Barat.

Lasers have become an indispensable tool in enabling 3-D imaging of materials, cell colonies and organisms such as plants. Such technology is being utilized regarding bio-diesel fuel research. Many researchers have studied the benefits and process of creating bio-diesel fuel, yet one thing hinders the ability for bio-diesel fuel from becoming more of a mainstream product.



The laser bay at the National Ignition Facility at Lawrence Livermore National Laboratory. *Photo courtesy of NIF.*

There’s no clear-cut efficient way in producing it. Thus, research has been taken down to microscopic levels, in observing physical and chemical structures of plants, to see if there are any possible connections that can be made in making the production of bio-diesel fuel more efficient and hopefully cost effective.

STAR POWER

Moreover, another application of lasers is found at NIF. The NIF site is as large as three football fields that contain brilliant scientists, physicists, engineers and technicians that work and test complex systems and equipment that will bring star power to Earth. Large optics, optical coating and large rapid growth crystals (600 pounds) are all produced on site at LLNL that amplify and divide large laser beams into 192 beams that will be focused into a target chamber onto a pellet made of deuterium and tritium enclosed in a small gold cylinder. The laser system will generate about nearly two million joules of ultraviolet laser energy that will heat and compress the pellet to about 100 million degrees and 100 billion times the Earth’s atmosphere that will create an immense discharge of energy otherwise known as fusion. Although the highlight of NIF’s expectation is fusion ignition, which discharges massive amounts of energy to be considered as a resource, the other goals are the conformation of nuclear weapon simulations, the cosmos, materials science and nuclear science.

NIF’s developments wouldn’t have been imaginable without the invention of lasers. As NIF is the forefront of modern laser technology, it is also relevant to consider other significant modern research such as BELLA of the Laser Optics and Accelerator Systems Integrated Studies (L’OASIS) Program of the Accelerator and Fusion Research Division at LBNL, which will also set another milestone that lasers will achieve in science. Project leader Wim Leemans, with BELLA, will develop a series of synchronized laser systems that will accelerate electrons up to 10-GeV (10 billion electron volts) within a relatively short distance (about 1 meter) that will provide an alternative form of an advanced light source and free electron lasers. From this, scientists not only can further study high-energy physics, but also with the use of free-electron lasers, chemists, biologists, materials scientists and researchers will obtain valuable tools to work with in high energy research. Additionally, such lasers could be modified to emit x-ray beams that could be used in the medical field to take very high-resolution x-ray images. The significance of the BELLA project to laser innovation is to provide amazing applications to a variety of advance research. With continued development in laser plasma accelerators, accelerator-based research costs could be radically cut down due to the condense size of these systems such as BELLA.

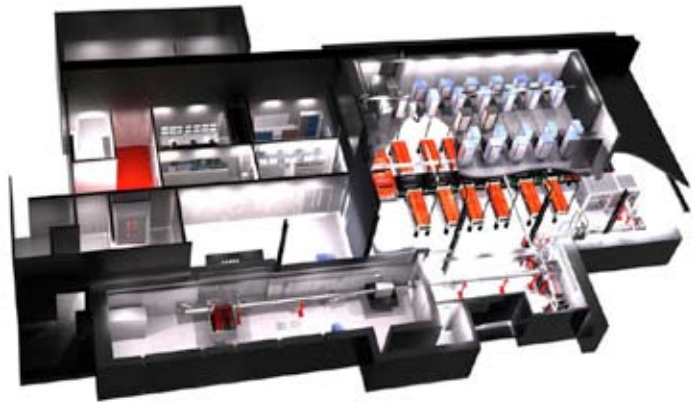
RESTORING THE PAST

Furthermore, another project conducted at LBNL is the Image, Reconstruct, Erase Noise, Etc. (I.R.E.N.E.) audio restoration project in which discs and cylinders are observed to restore historic recorded sound collections. Researchers achieved the goal of mapping out the surface of the media (records and cylinders). After mapping out the surface grooves, image analysis software is used to play the recorded sounds, based off of the grooves, much how a needle of a phonograph follows the grooves

of a record in order to play a particular song. The software emulates the direction of where the needle would go and how the audio would have played. By recreating these audios, it helps to preserve the original pieces, yet still allowing people to enjoy audio recordings from the past. The laser used in this particular project is a Class 1 laser and offers a non-contact method of analyzing the grooves and mapping them out, because if anything were to touch the material, it could alter the surface, thus affecting its grooves. This exemplifies how big of an impact even the most harmless of lasers have on R&D. Hence, lasers offer capabilities unparalleled by any other devices or machines because of its versatility and innovation over the years. ■

Robin Lopez and Toan Tran are students at Contra Costa Community College.

Acknowledgements: Ken Barat, our mentor at LBNL and Jamie King the LSO at NIF, LLNL for his time in giving us a tour of NIF. Our mentor from Contra Costa College's Center for Science Excellence (CSE) program, Dr. Chen Tsai, and our past physics professors, Dr. Conrad and Jon Celesia. Also, a huge thanks to all the researchers at LBNL who utilize lasers and allowed us to visit their respective labs.



The proposed set-up for the BELLA project, which will provide an alternative form of an advanced light source and free electron lasers. Photo courtesy of Ken Barat, LOASIS program at LBNL.



INDUSTRIAL Laser Solutions® FOR MANUFACTURING



Technology and Applications of Lasers for Industrial Materials Processing

Since its inception in 1986, *Industrial Laser Solutions'* goal has been to be the only resource devoted exclusively to global coverage of industrial laser applications, technology, and the people and companies who participate in this, the largest commercial portion of the global laser market. To accomplish this, we call on the services of a uniquely qualified international editorial staff, whose accumulated experience in this technology field exceeds 100 years!

Industrial Laser Solutions provides those new to the technology and those already practicing it first-hand expertise about the technical and economic benefits of this advanced manufacturing technology, thereby educating readers in ways to improve their operations while positively impacting profitability.

Powering Lasers
for Manufacturing on **OptoIQ**

SUBSCRIBE TODAY!
Log on to www.ils-subscribe.com.



Portable Blue Laser Poses A Hazard

LIA Warns Against Laser Danger, Encourages Training

As new lower-cost laser technology becomes more readily available to consumers, laser safety experts at the Laser Institute of America (LIA) are concerned for the public's safety.

Recently released to the public and promoted as the world's first 445 nm direct blue diode portable laser with output powers of up to 1 Watt, an internet retailer is selling this Class 4 laser product for under \$300.

"Our concerns are for the consumers, uninformed of the hazards, who may operate the device placing themselves and others at risk of injury," stated Peter Baker, LIA's executive director.

Class 4 lasers emit enough energy to be hazardous to the eye or skin from a direct beam, or indirectly reflected laser light. Even exposure to reflections scattered off of a matte surface may cause an eye injury. They are considered a fire hazard. Visible wavelengths can produce levels of light that can produce visual interference at large distances away from the source. This is normally a concern for individuals operating vehicles, boats or aircraft. It is also important to note that laser illumination of any aircraft will be investigated by law enforcement and anyone caught illuminating aircraft will be prosecuted to the fullest extent of the law.

As laser technology continues to develop, more powerful portable (handheld) laser systems are being produced at lower costs. This means that Class 4 laser systems that produce visible

emissions are becoming more accessible. Various laser safety standards referenced by state and federal agencies provide guidance for the safe use of these types of lasers in the workplace. However, consumers who buy Class 4 lasers, or organizations that have not implemented a laser safety program may not be aware of the hazards or the proper methods used to contain and control the hazards. Improper use of a Class 4 lasers can result in the operator, spectators or people in the vicinity of the laser operation being injured.

"As the authorities in laser safety we feel we must warn the consumer about the inherent danger that exists," warns LIA's Education Director Gus Anibarro. "We urgently recommend not purchasing this or any other Class 4 laser device until you have had proper laser safety training and understand what is involved in securing what will be a Class 4 laser environment."

As the international society for laser applications and safety, LIA offers a complete line of laser safety training courses for personnel in research, industrial and medical laser facilities. On-site training is also available. All of LIA's courses are based on the ANSI Z136 series of laser safety standards, of which LIA is the secretariat and publisher. Visit www.laserinstitute.org for more information. ■

Onsite Training

BRING CUSTOMIZED
LASER SAFETY TRAINING
TO YOUR FACILITY

To receive a quote call today!
1.800.34 LASER

 **Laser Institute of America**
Laser Applications and Safety

Improve the Health of your Medical Laser Safety Program

LIA's Medical Laser Safety Officer Training

- November 6 - 7, 2010 San Diego, CA
Chattanooga, TN
- November 13 - 14, 2010 Chicago, IL
- February 12 - 13, 2011 Atlanta, GA
- March 12 - 13, 2011 San Jose, CA

Visit www.laserinstitute.org/education for course information



**Laser Institute
of America**
Laser Applications and Safety

www.laserinstitute.org | 407.380.1553 | 1.800.34.LASER



Laservision

WE PROTECT YOUR EYES

LASERVISION is your worldwide laser safety expert with more than thirty years in the industry. We specialize in cutting edge design, development and manufacture of laser protective technologies for the safe use of lasers. Laser users worldwide rely on Laservision for the most advanced laser safety solutions and technical support including:

- Laser Protective Eyewear
- Laser Barrier & Curtain Systems
- Laser Safety Windows
- Laser Safety Signs & Labels
- Laser Safety Consulting

Contact the certified laser safety experts at Laservision. We are pleased to discuss your application and assist you with your laser safety program requirements.

www.lasersafety.com
1-800-393-5565
phone: 651-357-1800
fax: 651-357-1830

©2010 Laservision, all rights reserved.





CORPORATE MEMBER PROFILE

IPG PHOTONICS

LIA Corporate Member IPG Photonics is a leading developer and manufacturer of high-performance fiber lasers and amplifiers for diverse applications in numerous markets. IPG Photonics' diverse lines of low-, mid- and high-power lasers and amplifiers are used in materials processing, communications, medical and advanced applications. The company pioneered the development and commercialization of optical fiber-based lasers, a new generation of lasers that combine the advantages of semiconductor diodes with the high amplification and precise beam qualities of specialty optical fibers. Because these lasers deliver superior performance, reliability and usability at a lower total cost of ownership compared with conventional lasers, fiber lasers are displacing traditional lasers in many current applications and enabling new applications for lasers.

ABOUT IPG

Headquartered in Oxford, Mass., IPG is a global company of over 1,500 employees with manufacturing facilities in the U.S., Germany, Russia and Italy, and regional sales offices in Detroit, Silicon Valley, China, France, India, Japan, Korea, Singapore and the U.K. The company sells its products globally to OEMs, system integrators and end-users in a wide range of diverse markets that have the in-house engineering capability to integrate IPG's products into their own systems. Since its founding in 1990, IPG has shipped more than 40,000 units to over 500 customers worldwide.

More specifically, IPG manufactures active fiber lasers, direct diode and amplifiers operating at .7 to 2 microns for applications in materials processing, telecommunications and scientific research. Industrial lasers operating at 1 micron are available from 10 watts to greater than 50 kilowatts. These devices feature low divergence, air cooling, high electrical efficiency and unparalleled diode life.

EVER EXPANDING

In the spring of 2010, IPG Photonics acquired privately-held, Germany-based Cosytronic KG (COSY), a specialist in the joining technology with an emphasis on engineering know-how in automated welding turnkey solutions. The acquisition allows IPG to extend its product offerings to include a welding tool that integrates seamlessly with IPG's fiber laser.

"With the acquisition of Cosytronic, we plan to enhance IPG's product portfolio of laser welding tools with fiber lasers – a promising complementary market for us," said Dr. Valentin Gapontsev, IPG Photonics chairman and CEO. "Combining our state-of-the-art fiber laser technology with COSY's proven and innovative laser welding technology opens exciting opportunities to build robust integrated robotic solutions for various automotive, sheet metal production and other material applications."

IPG Photonics also acquired the outstanding shares of privately-

held, Birmingham, Alabama-based Photonics Innovations, Inc. (PII), a maker of active and passive laser materials and tunable lasers for scientific, biomedical, technological and eye-safe range-finding applications. The January 2010 acquisition allows IPG to expand its product offerings to the middle infrared (approximately 2 to 5 micron). PII's core capabilities include novel optical and laser materials fabrication, solid-state and tunable laser design and optical and sensing systems development. PII was established by researchers at The University of Alabama at Birmingham (UAB) to apply proprietary and patented optical materials, lasers and spectroscopic technologies to the development and commercialization of state-of-the-art optical sensing instruments.



IPG's QWC

HAVING AN IMPACT

The company is leveraging its brand and position as a pioneer and leader in developing and commercializing fiber lasers and amplifiers to increase its market share in the broader market. According to the company, IPG's lasers should continue to displace traditional lasers in many existing applications due to their superior performance and value. Quite simply, IPG's products are disrupting the market by empowering tomorrow's applications today, they state.

"IPG reported stronger second-quarter financial results, continuing the momentum that has been building in 2010," said Gapontsev. "Despite some underlying uncertainties in the global macro-economic environment during the second quarter, many of our end markets are benefitting from a secular recovery.

"Materials processing had an outstanding quarter with sales increasing 91% year-over-year and 34 percent on a sequential basis. Demand for high-power cutting lasers and pulsed lasers for engraving and marking drove this strong performance as did sales to China, which more than tripled from the same period last year. Medical application sales continued to be strong, increasing 32 percent. Advanced applications sales were five percent lower year-over-year and up 15 percent sequentially, and telecommunications sales decreased 24 percent year-over-year and improved 15 percent sequentially as customers began re-ordering."

IPG's plans for the future are simple – to continue to displace existing laser and non-laser technologies and target new applications for fiber lasers with the manufacture of simple, more usable lasers. The company also plans to expand its product portfolio and develop integrated laser systems business. For more information, visit www.ipgphotonics.com. ■

ROCKWELL LASER INDUSTRIES

(800) 94-LASER

www.rli.com



MEASUREMENTS FOR LASER SAFETY

April 12-14, 2011 Cincinnati, OH

Course: L-240

Length: Two and a half days

Credits: 3.17 ABIH CM Points, 32 CEC's Awarded by AAHP, 1.875 BCSP COC Points (Category 7)

Course Description:

This intermediate level hands-on course will teach you how to perform laser safety measurements according to applicable laser safety standards. The course will focus on workshop exercises that use laser output measurement equipment to solve real-world laser measurement problems.

Topics:

- Pulse duration determinations
- Irradiance and Radiant exposure
- Multiple pulse and scanning lasers
- Near field and far field measurements
- Diameter of focused beams
- Beam spatial characteristics
- U.S., ANSI, FDA/CDRH, and International Standards (IEC measurement requirements)



Barriers and Curtains

Compliant with ANSI and IEC Standards

Laser exposures of up to 300 W/cm^2

Ceiling, frame mount or custom designs

Call for free barrier hazard analysis

LAZ-R-Shroud™ is a laser barrier system that provides protection against beams emitted and scattered from various laser sources.

Laser Safety Consulting

FDA/CDRH Consulting Services

Laser Facility Design

Laser Enclosure Design & Manufacturing

International Consulting Services

Accredited Testing Laboratory



BLS UPDATE

Berkeley, California – the 6th Annual Laser Safety Officer Workshop, held at Lawrence Berkeley National Laboratory July 27-29, promised “presentations on topics not found in standard laser safety training and solutions to real-world laser safety issues.”

The workshop certainly delivered with its invited papers (the opening presentation by Professor Charles Townes was one of the highlights of the meeting), panel discussions (which allowed attendees to raise questions and examine best practices), mini-workshop sessions on laser hazard software (attendees sought answers to their problems and manufacturers received direct user feedback) and countless opportunities for networking (including a tour of the Advanced Light Source).

Along with the laser hazard software vendors, the BLS hosted a mini-workshop session. This was an opportunity for those interested in becoming certified to ask questions to the CLSOs in attendance, in addition to receiving basic information on the certification process. The session went extremely well; the interaction between prospective candidates and CLSOs was phenomenal. Patrick Patterson, one of our newer CLSOs stated, “I really enjoyed the BLS mini-workshop and would like to see it be a part of a formal presentation at future workshops. Meeting other CLSOs and the development of new relationships with some of those folks was the greatest benefit to participating in the workshop for me.”

From Bob Sarason, “The conference gave us a glimpse into our future as laser safety officers, what we could expect in the next eight or so years; what problems we could face as safety professionals as lasers become more powerful and faster, terawatt lasers, attosecond lasers or complex, white light lasers, desktop linear accelerators... It’s a place where people understand what you are talking about, who actually care and have faced the same or similar issues. It’s a place where old friends get together with new friends to talk laser safety like nobody else does at your workplace... Next year I’d say ‘Be there or be left behind in its wake.’” ■



BLS[®]
Board of Laser Safety



CLSO[®]
Certified Laser Safety Officer

Intended for professionals who are working with lasers in a scientific, manufacturing, or industrial environment.

CMLSO[™]
Certified Medical Laser Safety Officer™

Intended for professionals who are working with lasers in any medical environment.

CERTIFICATION for Laser Safety Officers

- Get connected with other laser safety professionals
- Gain a competitive edge
- Stay current on changes in the industry
- Achieve recognition

For more information or to obtain a complete information packet.

Visit: www.lasersafety.org
Call: 1.800.34.LASER



ASC Z136 UPDATE

Plan ahead! The next ASC Z136 Annual Meeting will be held on Sunday, March 13, 2011 in conjunction with the International Laser Safety Conference (ILSC) in San Jose, California at the Doubletree Hotel San Jose. In addition to the annual meeting, watch for other ancillary meetings (Z136 subcommittees and IEC TC76 working groups) to be scheduled during the week of March 14-18. A meetings list will be published closer to ILSC for planning purposes.

Reserve your space today! ASC Z136 Subcommittee Chairs – If you would like to hold a subcommittee meeting during ILSC week, please contact Barbara Sams at bsams@laserinstitute.org or by calling 407-380-1553. Meeting space is available on a first-come, first-serve basis. ■



JLA UPDATE

The *Journal of Laser Applications*® offers the latest refereed papers by leading researchers in the laser community. Visit www.laserinstitute.org/subscriptions/jla for the online version. To view the journal online, please make sure your membership is current. In addition, articles are now posted online as the production cycle is completed ensuring timely publication.

The JLA is published four times a year by the LIA in February, May, August and November. It is sent to all 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://scitation.aip.org/jla/alert.jsp>.

**ALL THE TOOLS YOU NEED.
ALL IN ONE PLACE.**



When it comes to getting the tools you need to improve productivity, increase profits and find new ways to survive in today's competitive business environment, nothing compares to **FABTECH**. One week, one convenient location, one opportunity to keep your business on the cutting edge.

REGISTER TODAY:
www.fabtechexpo.com



NOVEMBER 2-4, 2010

GEORGIA WORLD CONGRESS CENTER | ATLANTA, GEORGIA



SAFETY LASER CORNER

TOOLS OF THE LASER SAFETY TRADE CONTROLLING THE BEAM

In the last two articles we discussed locating and analyzing the laser beam. Now, it falls upon the shoulders of the laser safety officer (LSO) to assess the environment in which the laser is operating. This assessment may lead to requiring the use of laser safety curtains or laser safety barriers to prevent the laser beam from escaping the area through an entryway. Laser safety curtains are tools available to the LSO for entryway control. They are flexible and can be cut to any dimension. Curtains are hung like drapes from track systems or are attached to or suspended from a ceiling, but may also be configured as a floor-mounted system with vertical uprights carrying the load. Sometimes curtains are referred to as “barriers” because the material is opaque. Laser safety curtains per the ANSI Z136.1 “shall be specifically selected to withstand direct and diffusely scattered beams.” Therefore, curtains should not combust or ignite or release toxic fumes when struck by a laser beam. In addition, the *ANSI Z136.1 for Safe Use of Lasers* requires that a damage threshold limit (TL) and the exposure time for that threshold limit is exhibited on the curtain.

While curtains can provide a range of protection, they may not be able to withstand very high irradiance levels for more than

a few seconds. A stronger form of protection is needed. This is when laser safety barriers may have to be used. Laser barriers are opaque and are also called partitions, guards or screens. They are freestanding laser-blocking devices usually made of a light metal. They can withstand higher irradiances than curtains, but like curtains must have the threshold limit and exposure time marked on the barrier. Many systems provide rollers or casters attached to the support legs. Some systems also provide a method or accessories for attaching multiple barriers together with no safety gaps. They are used to block or attenuate reflected or direct beams in entryways and are used during times of service. They can also be used to establish a boundary for a laser-controlled area. Per the *ANSI Z136.1 for Safe Use of Lasers* standard laser barriers “shall be specifically selected to withstand direct and diffusely scattered beams.”

Curtains and barriers are very useful tools for laser beam control. They serve as a good entryway control and in laser beam containment when lasers are being serviced. ■

LIA Career Center

JOB SEEKERS

Whether you're looking for a new job, or ready to take the next step in your career, we'll help you find the opportunity that you've been looking for.

EMPLOYERS

Target your recruiting to reach qualified professionals quickly and easily. Search the resume database to contact candidates, and get automatic email notification whenever a candidate matches your criteria.

Visit <http://careers.laserinstitute.org> today to post your job or search job listings.

FIND A JOB FILL A POSITION

Many job seekers and employers are discovering the advantages of searching online for industry jobs and for qualified candidates to fill them. But when it comes to making career connections in the field of laser technology, the mass market approach of the mega job boards may not be the best way to find exactly what you're looking for.

The **Laser Institute of America (LIA)** has created the **LIA Career Center** to give employers and job seeking professionals a better way to find one another and make that perfect career fit.



**Laser Institute
of America**
Laser Applications and Safety

1.800.34LASER
www.laserinstitute.org

LASER INSIGHTS

Laser Insights is a new feature to give insight into the very latest developments of laser materials processing and the possible applications. These overviews are designed to provide perspective on the content and applications of the papers presented at our conferences and workshops.
Visit www.laserinstitute.org/laserinsights to begin your search, or use the direct link provided below for each paper.

PRECISION CUTTING & DRILLING METALS WITH A FIBER LASER MARKER,

by Hong Q. Chen

Recently developed pulsed fiber laser marking system is becoming a powerful tool for precision cutting and drilling. It can provide dimensional cut repeatability to sub 10 microns, cut or drill material up to 0.5 mm with minimal to no burring, and offer multi-axis motion options.

DUAL MODE HIGH BRIGHTNESS FIBER LASER FOR ABLATION AND DRILLING OF AEROSPACE SUPERALLOYS,

by Mohammed Naeem

Fiber lasers with its high beam quality (M2~ 1.10) are routinely being used for welding and cutting for a range of industrial applications. These fiber lasers are very compact and robust and have an edge over lamp-pumped Nd: YAG lasers in terms of beam quality and wall plug efficiency (approx 20%).

View complete articles at www.laserinstitute.org/laserinsights under the Laser Machining Category.

ULTRA SHORT PULSES ALIGN NANO-SCALE COMPONENTS WITHIN A COMPLETE DEVICE,

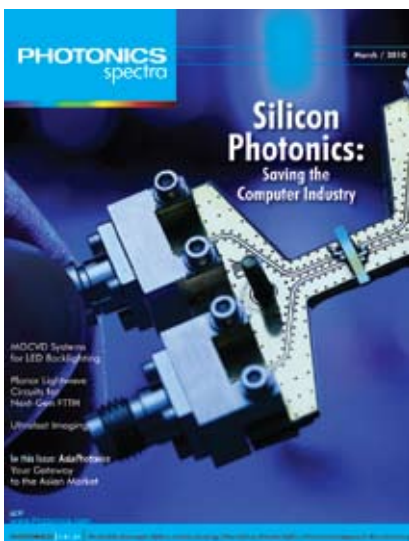
by Peter Bechtold

The trend in manufacturing today is to make everything smaller. Electronic gadgets, mechanical devices – everything is shrinking. Examples that come to mind are tiny MEMS accelerometers built into automotive seat belts, or miniature medical-diagnostic labs-on-a-chip, or one-inch hard-disk drives.

LASER SINTERING OF SILVER NANOPARTICLES,

by Petri Laakso

Lasers show high potential for the curing process, especially in the case of nanoparticulate inks. This is due to fact that the typical sintering temperatures for nanoparticles (100–300°C) are only a fraction of the macroscopic melting point of the corresponding materials. This allows paper or plastic substrates to be used.



published by:
Laurin Publishing
Berkshire Common
PO Box 4949 Dept. LA
Pittsfield, MA 01202-4949
Tel: +1 (413) 499-0514
Fax: +1 (413) 442-3180
E-mail: photonics@laurin.com

Read the Industry's Leading Magazine

Get The Information You Need To Stay Ahead

Photonics is a fast-paced technology, and keeping up with the day-to-day developments in optics, lasers, imaging, fiber optics, electro-optics and photonic component manufacturing has never been so critical.

Photonics Spectra magazine will keep you on top of developments with complete news and information on this technology each month. The latest information on research and development, innovative applications and products, new ideas in design, business trends – all of these are in every issue of *Photonics Spectra*.

Today, more professionals in this industry read *Photonics Spectra* than any other photonics publication. The industry's most experienced editorial staff presents feature articles on timely subjects, vital news on the latest photonics technology and columns designed to give you the complete picture of the photonics industry.

To Get a Free Subscription,

visit us at www.photonics.com or call +1 (413) 499-0514.

WELCOME NEW MEMBERS

CORPORATE MEMBERS

- CorActive High-Tech, Quebec, QC, Canada
- Visotek, Inc., Livonia, MI
- WEG Electric Corp, Duluth, GA

For a complete list of corporate members, visit our corporate directory at www.laserinstitute.org/membership.

INDIVIDUAL

Nick Cote, Huntsville, AL
Wayne Wigand, Mesa, AZ
Robert Acuna, Phoenix, AZ
Michael Brooks, Phoenix, AZ
David Ruben, Tempe, AZ
Keith Carsten, Tucson, AZ
Eric Koschmann, Tucson, AZ
Mathew Rekow, Cambell, CA
Mike Nashner, Cupertino, CA
Corey Dunsky, Los Gatos, CA
Arzu Ozkan, Pacifica, CA
Karen Janiga, Riverside, CA
Anthony Clark, San Diego, CA
Anchun Tien, San Jose, CA
Magnus Bengtsson, Santa Ana, CA
Matthew Baldwin, Santa Rosa, CA

Len Marabella, Santa Rosa, CA
Khan Bui, Arvada, CO
Chandra Seckar, Boulder, CO
Walt Bosenberg, Bloomfield, CT
Yiming Xu, Milford, CT
Susanne Matascik, Bradenton, FL
Stacia Madden, Gainesville, FL
Jeffrey Hill, Weston, FL
Jaimie Daughtry, Marietta, GA
Xinwei Wang, Ames, IA
Fei He, West Lafayette, IN
Masahiro Yamakage, Erlanger, KY
Hongyan Gu, Lexington, MA
Michael McNeil, Mendon, MA
David Smith, Needham, MA
Deborah Fuentes, Springfield, MA
Warren Pinches, Westborough, MA

Lijun Song, Ann Arbor, MI
Ashish Dasgupta, Detroit, MI
George Carty, Saginaw, MI
Subhash Danak, Shelby Township, MI
Guru Dinda, Troy, MI
Sandra Davidson, Minneapolis, MN
Minnick Eargle, Fort Bragg, NC
Timothy Dupuis, Dover, NH
Cynthia Wyskiel, Dover, NH
Sachin Bet, Nashua, NH
Alex Schreiner, Hillsboro, OR
Hisashi Matsumoto, Portland, OR
Yasu Osako, Portland, OR
John Hunter, Allison Park, PA
Janet Touchstone, Drexel Hill, PA
David Demarest, Glenolden, PA
Steve Jackson, Glenolden, PA
Roland Gassmann, New Castle, PA
Nelson Orozco, Florence, SC
Richard Haglund, Brentwood, TN
Donna Crisp, Chattanooga, TN
Robert Ossoff, Nashville, TN
Christ-Singh Khalsa, Austin, TX
Shanglu Yang, Dallas, TX
Erin Hader, Houston, TX
Connie Gambino, Laredo, TX
Gregory Nightingale, Vancouver, WA
Larry Cherne, Brookfield, WI
James Buckle, Somerset, WI
Tom Money Penny, Somerset, WI
Cody Keating, Kitchener, ON, Canada
Sylvain Pelletier, London, ON, Canada
Mike Janyu, Sarnia, ON, Canada
Michel Meunier, Montreal, QC, Canada
Matthieu Schneider, Paris, France
Alexander Olowinsky, Aachen, Germany
Sonja Huber, Garching, Germany
Ralf Knappe, Kaiserslautern, Germany
Peter Berger, Stuttgart, Germany
Jan Weberpals, Stuttgart, Germany
Hiroyuki Hidai, Chiba, Japan
Takunori Taira, Okazaki, Japan
Ryoichi Kuwano, Sagami, Kanagawa, Japan
Kazuyoshi Itoh, Suita, Osaka, Japan
Nukman Yusoff, Kuala Lumpur, Malaysia
Mahadzir Ishak Pekan, Pahang, Malaysia
Xincai Wang, Singapore, Singapore
Guoxin Chen, Singapore
Chung Dae, Anyang, South Korea
Seungjae Lee, Anyang, South Korea
Patricia Popoola, Pretoria, South Africa
Xerman De La Fuente, Zaragoza, Spain
Urban Widen, Vallda, Sweden

LASER World of PHOTONICS CHINA
SOLUTIONS in LIGHT
The Leading Platform on the Laser and Photonics Market in Asia

March 15-17, 2011
Shanghai New International Expo Centre
www.world-of-photonics.net

Exhibition Areas

- Lasers and optoelectronics
- Laser systems for production engineering
- Test and measurement
- Optical and optical manufacturing
- Optical fiber communication

Product Range

- Lasers and optoelectronics
- Optics
- Production technology for optics
- Sensors, test and measurement
- Service
- Optics system (especially engineering)
- Medicine
- Lasers and laser systems for production engineering
- Optical measurement systems
- Optical information technology
- Welding
- Simulation
- Optical fiber communication

Conference Program

- 6th International Conference on Laser Processes and Components (LPC 2011)
- The 10th Laser Technology Forum and Outstanding Achievements Release Conference of Chinese Optics 2010

WIP (Shanghai) Co., Ltd.
Add: 1108 Zhou SC Tower, No. 1288 Yuan Yuan Rd, Pudong New Area, Shanghai 200120
Tel: +86 21 2020 9300
Fax: +86 21 2020 9300
Email: info@wip-shanghai.com
www.wipsh.com

Messe München GmbH
Add: Messingstraße 1-3 | 81221 München, Germany
Tel: +49 89 340 2020
Fax: +49 89 340 2025
Email: sales@messe-muenchen.de
www.world-of-photonics.net

MEMBERS IN MOTION

COHERENT IN FLEXIBLE ELECTRONICS

Coherent, Inc., Santa Clara, Calif., and Holst Centre, an open-innovation initiative by imec (B) and TNO (NL), have recently began cooperating in the field of flexible electronics. Coherent's expertise in advanced laser equipment supports the strategy of Holst Centre to expand the current focus in its program on integration technologies for flexible systems. The cooperation between the two encompasses the installation of a short-pulse (picosecond) laser source in the electronic foils processing equipment to be used for high-precision and low-defect laser ablation in sheet-to-sheet production of OLED and OPV devices.

Holst Centre has considerable expertise in integration technologies for applications in flexible foils. The current cooperation with Coherent is another step forward in the growth of the program and will allow Holst Centre to make significant progress in laser-based technologies. For more information, visit www.Coherent.com or www.holstcentre.com.

NEWPORT OFFERS VARIETY OF SUPPORT RESOURCES

Newport Corporation, Irvine, Calif., now offers a wide variety of technical support resources including video demonstrations, technical articles, application notes, product instructional manuals and technology tutorials. Instructive product videos can be found on www.youtube.com/NewportCorporation and the company's

published technical articles are available at www.newport.com/articles. Technical application notes and references are also archived on the site. The company has recently compiled a free, comprehensive products, technologies, capabilities and services brochure for the motion control industry entitled *Our Solutions at Your Service* found at www.newport.com/motion.

SPINNING A BIGGER WEB

Ophir-Spiricon, Logan, Utah, has updated its website by adding Chinese and Russian languages, bringing the total number of languages supported to five. It now supports Chinese and Russian content and search functions in addition to English, Japanese and Dutch. Check it out at www.ophir-spiricon.com.

2011 TURBOMACHINERY CONFERENCE

The Fraunhofer Institute for Laser Technology ILT and the Fraunhofer Institute for Production Technology IPT, as organizers, are inviting companies from airplane construction and energy technology to exchange experiences and to discuss current trends at the 1st International Conference on Turbomachinery Manufacturing Feb. 23-24, 2011 in Aachen, Germany. The focus lies on innovative procedures for the measurement, manufacturing and repair of modern turbomachines. For more information, e-mail info@ictm-aachen.de. ■

Greater technical depth than any other publication in the field!

LaserFocusWorld®

LASERS • OPTICS • DETECTORS • IMAGING • FIBER OPTICS • INSTRUMENTATION • SOFTWARE

International resource for technology and applications in the global PHOTONICS INDUSTRY

Published since 1965 *Laser Focus World* is a global resource for engineers, researchers, scientists, and technical professionals providing comprehensive global coverage of optoelectronics technologies, applications and markets. Each month, *Laser Focus World* reports on and analyzes the latest developments and significant trends in both technology and business in the worldwide optoelectronics and photonics industry.

SUBSCRIBE TODAY! Log on to www.lfw-subscribe.com.



MEMBER INNOVATIONS

NEWPORT INTRODUCES SMARTTABLE OVERHEAD SHELF

Newport Corporation, Irvine, Calif., has introduced the OTSE Integrated Overhead Shelf, the newest product in the SmartTable OTS™ optical table system family. The OTSE is an integrated overhead shelf that connects directly to the SmartTable-OTS frame so the entire system has a smaller footprint, more rigid design and provides more accessibility to the table than other competitive shelf systems. This integration makes moving even the most complex system easy. The overhead shelf features a 23.5-inch deep surface and 300-pound load capacity to provide sufficient room and stability for even the largest instruments. For more information, visit to www.newport.com/OTSE.

STARLAB LASER POWER/ENERGY SOFTWARE ADDS SUPPORT

Ophir-Spiricon, Logan, Utah, has introduced StarLab 2.01 laser measurement software that converts a PC into a multi-channel laser power/energy station. Features of the newest version of the software include Windows 7 64-bit compatibility and LabVIEW support for Ophir-Spiricon's Juno USB laser sensor to PC interface. StarLab works with Ophir-Spiricon's smart displays and PC interfaces, allowing users to measure, analyze and

record laser power and energy parameters from the company's line of smart power/energy sensors. For more information, visit www.ophiropt.com/laser-measurement.

Ophir-Spiricon also announced that BeamGage®, the company's next generation laser beam analysis software, now supports the XEVA InGaAs NIR Camera for demanding applications. XEVA delivers high sensitivity in the NIR spectrum (900-1700 nm) at room temperatures, making it useful for both laboratory and industrial applications. A unique, non-uniformity correction algorithm handles two-point correction plus bad pixel correction to improve image accuracy. For more information, visit www.ophiropt.com/laser-measurement.

COHERENT EXTENDS LINE

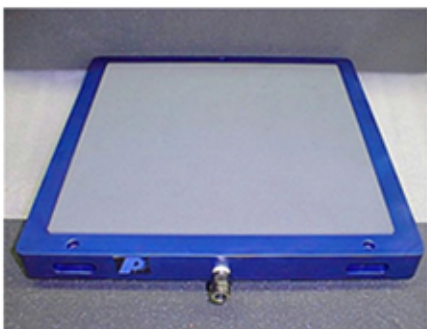
Coherent Inc., Santa Clara, Calif., has expanded its PowerMax™-USB/RS series of laser power measurement products with the addition of several new sensors. PowerMax-USB/RS sensors, first introduced in December 2009, were the world's first to integrate a sensor head with complete meter electronics that are miniaturized within a USB 2.0 or RS232 cable connector. The original product offering included optical and thermopile sensors that enabled laser power measurement up to the tens of watts range. Now, new PowerMax sensors extend this into the kilowatt range

Other new additions to the PowerMax-USB/RS product line are a series of convective air-cooled, single element thermopile sensors that allow power measurement in the 10 mW to 30W range, from wavelengths of 190 nm to 11 μm. These new PM-series sensors can withstand higher average powers in a smaller package than the previously available LM-series sensors, and also typically have a lower noise floor. This combination of smaller size and higher performance makes them particularly useful for embedding into tight spaces in demanding laser-based systems. For more information, visit www.Coherent.com.

FRAUNHOFER WELDS PLASTICS

Researchers at the Fraunhofer Institute for Laser Technology ILT recently introduced the TransTWIST laser-based plastics welding machine that is able to weld transparent plastics without any seam marks. Using laser radiation, two transparent joining partners made of plastic can be lap-welded. In conventional laser welding, a suitable radiation absorber is normally applied to the underlying joining partner. This is time consuming and costly. Furthermore, the appearance of the component or weld is affected by the color of the radiation absorber. In a lap joint configuration transparent polymers are welded without the addition of infrared absorbers. This eliminates the need for elaborate pretreatment, saving process time and costs, and represents a breakthrough in plastics laser welding. TransTWIST shows a great potential for use bio-biomedical field, especially microfluidics, packaging industry and in design applications. For more information, visit www.ilt.fraunhofer.de. ■

Porous Ceramic Vacuum Chucks



6" and 12" square in stock!
Standard pore size 20 microns!
Custom sizes and shapes available.



www.photomachining.com/inventory/
sales@photomachining.com
603-882-9944



SAVE THE DATE FOR LAM

Join us for LIA's third annual Laser Additive Manufacturing Workshop (LAM) 2011 to learn from industry specialists from around the world with the goal of applying this state-of-the-art process (cladding, sintering and rapid manufacturing) to today's manufacturing challenges. Being held Feb. 16-17, 2011 in Houston, Texas, LAM 2011 offers quality technical sessions and networking opportunities to discuss equipment and applications with vendors and your peers. If you are a manufacturing, process, R&D, applications or construction engineer or manager, or involved in system integration or precision parts, you should attend. Industries represented include oil and gas, aerospace, agriculture, automotive, highway transportation, bio-medical and more.

LAM's topics will include laser cladding for aerospace, automotive, DoD, heavy equipment, oil and gas and power generation, new cladding techniques for component repair and general manufacturing, research, development and international applications of additive manufacturing. Come join world leaders in laser additive manufacturing design and research. Network, educate, provide solutions! Make plans now to attend.

LAM will also provide a unique opportunity to market your company's products and services to new customers and new prospects. Meet face-to-face with a highly qualified target audience via a tabletop exhibit at LAM's Exhibitor Reception or through one of our many sponsorship opportunities. For further information about sponsorships, contact Dave Evans at devans@laserinstitute.org, 407-380-1553. A sponsor and exhibit flyer may also be downloaded from www.laserinstitute.org/conferences/lam/sponsors_and_vendors.



INTERNATIONAL LASER
SAFETY CONFERENCE

SAVE THE DATE FOR ILSC

The 2011 International Laser Safety Conference (ILSC®) is a comprehensive four-day conference covering all aspects of laser safety practice and hazard control. 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 Practical Applications Seminars (PAS) complement the scientific sessions by exploring everyday scenarios that the laser safety officer and medical laser safety officer may encounter. For ILSC 2011, we are expanding PAS to include the medical community. Laser safety experts from all over the world will meet and discuss their research, programs and standards. Professionals in all fields and applications will find ILSC 2011 a tremendous source for information and networking opportunities, so mark your calendars now to attend. For more information, visit www.laserinstitute.org/conferences/ilsc.

LIA SUPPORTS CHINA CONFERENCE

For the sixth time the International Conference on Laser Processes and Components (LPC) will take place within the framework of the trade fair LASER World of PHOTONICS CHINA 2011 (March, 15-17, 2011) in the Shanghai New International Expo Centre and is being organized again by Messe München International in cooperation with the Laser Institute of America and Chinese Optical Society-Laser Processing Committee.

In the previous years the Chinese laser market has developed at a rapid pace. The People's Republic of China is one of the biggest export target markets for photonics products. The focus of the conference is to promote the cooperation and the technology transfer between science and industry in the field of laser technology. Laser material processing technologies, laser components as well as current developments and trends in optical technologies will be presented at the two-day event.

For information about LASER World of PHOTONICS CHINA 2011, visit www.lpc-conference.org.

UPCOMING LIA COURSES

LIA has been delivering quality, trusted laser safety training for over 40 years and trains more laser safety officers and laser users than anybody else in the world. As secretariat of the ANSI Z136 series of laser safety standards, the foundation of laser safety programs nationwide, LIA has assisted laser users in developing and implementing safety programs throughout the country.

There's still time to get that training marked off your 2010 to-do list as LIA will be offering a Laser Safety Officer with Hazard Analysis course Nov. 1-5 in San Antonio, Texas, a Laser Safety Officer course Dec. 7-9 in Clearwater, Fla. and a Medical Laser Safety Officer course Nov. 6-7 in San Diego, Calif. and Chattanooga, Tenn., as well as Nov. 13-14 in Chicago, Ill.

Don't settle for less; come to the leading laser safety source and get your laser safety training. For more information, visit www.laserinstitute.org/education. Register now!

ENGINEERS WEEK 2011

The Laser Institute of America is proud to continue its support of Engineers Week as an endorsing partner. Engineers Week will be held Feb. 20-26, 2011 and will be celebrating its 50th anniversary as the only program to celebrate and recognize the importance of engineers. For more information, e-mail info@eweek.org. ■



Laser Institute of America

Laser Applications and Safety

13501 Ingenuity Dr., Suite 128
Orlando, FL 32826

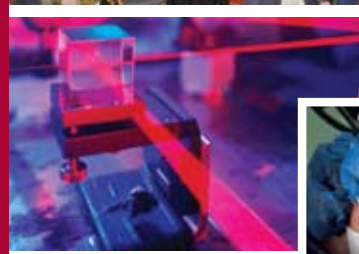
Non-Profit Org.
U.S. Postage
PAID
Permit #2342
Orlando, FL



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.

Featuring:

- Laser Safety Scientific Sessions
- Technical Practical Applications Seminar
- “Hot Topic” Luncheon
- Awards Luncheon
- **New for 2011!** Medical Practical Applications Seminar – Earn contact hours while experiencing cutting-edge presentations



The World's Leading Conference on Laser Safety



INTERNATIONAL LASER SAFETY CONFERENCE

March 14 - 17, 2011

**Doubletree Hotel San Jose
San Jose, CA, USA**

Presented by:

Laser Institute of America

Laser Applications and Safety



For more information please contact the LIA:

+1.407.380.1553 | 1.800.34.LASER | www.laserinstitute.org/ilsc | conferences@laserinstitute.org