



# 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: ICALEO2010 | VOLUME 18 NO. 4 | JULY / AUGUST 2010

*Celebrating the*  
**50<sup>th</sup>**  
*Anniversary*  
*of the laser*

**Come Celebrate 50 Years of Advancing Laser Technology.  
Recognize Industry Pioneers!**

## ICALLO<sup>®</sup>

29<sup>th</sup> INTERNATIONAL CONGRESS ON  
APPLICATIONS OF LASERS & ELECTRO-OPTICS

*Dr. Charles Townes*

*Dr. Steven Chu*

*Dr. Kumar Patel*

*Dr. Robert Hall*



**Pillars of the World  
of Lasers - pg. 5**



**ICALLO Celebrates  
All Things Laser - pg. 6**



**Laser Institute  
of America**

*Laser Applications and Safety*

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# 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](mailto:lia@laserinstitute.org).

### 2010 LIA OFFICERS

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### CALENDAR OF EVENTS

<b>Laser Safety Officer Training</b> Dec. 7-9, 2010   Clearwater, FL
<b>Laser Safety Officer with Hazard Analysis*</b> Sept. 27 - Oct. 1, 2010   Anaheim, CA Nov. 1-5, 2010   San Antonio, TX <i>*Certified Laser Safety Officer exam offered after the course.</i>
<b>Medical Laser Safety Officer Training*</b> Sept. 18-19, 2010   Boston, MA Oct. 23-24, 2010   Atlanta, GA Nov. 6-7, 2010   San Diego, CA <i>*Certified Medical Laser Safety Officer exam offered after the course.</i>
<b>Advanced Medical LSO Training*</b> Sept. 9-12, 2010   Atlanta, GA <i>*Certified Medical Laser Safety Officer exam offered after the course.</i>

<b>ICALEO® 2010</b> Sept 26-30, 2010   Anaheim, CA
<b>ILSC® 2011</b> Mar. 14-17, 2011   San Jose, CA

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

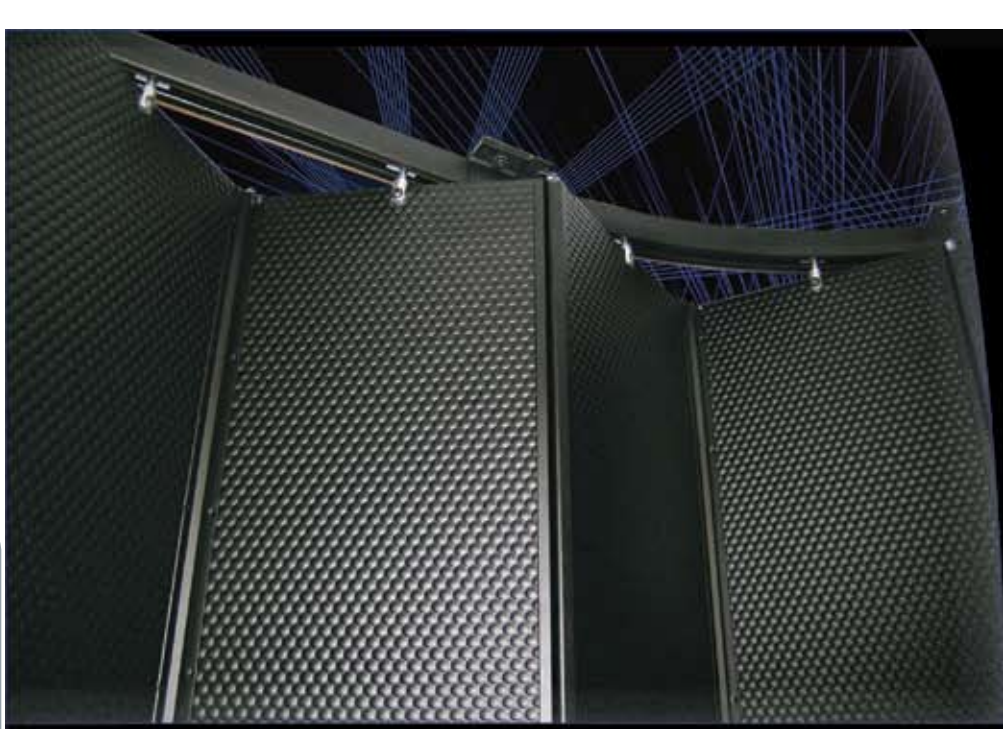
### ABOUT LIA

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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**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.



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**Laser Institute of America**

Laser Applications and Safety



## PRESIDENT'S MESSAGE



The 29<sup>th</sup> International Congress on Applications of Lasers & Electro-Optics, ICALEO<sup>®</sup> 2010, scheduled for September 26-30, 2010, is rapidly approaching and the excitement is starting to escalate. Congress General Chair Xinbing Liu, LIA Executive Director Peter Baker and LIA Director of Conferences Gail Loiacono have structured an outstanding conference for our celebration of and contribution to the 50<sup>th</sup>

anniversary of the invention of the laser.

ICALEO 2010 will be highlighted by the presentation of the 2010 LIA Lifetime Achievement Award to laser co-inventor Charles Townes, Ph.D., the 1964 Nobel Prize Laureate for physics. Be prepared not only for a technically informative presentation, but also one that will be very entertaining. If the appearance of one preeminent Nobel Prize winner is not enough, we will also be presenting the 2010 Arthur L. Schawlow Award to Steven Chu, Ph.D., U. S. Secretary of Energy and winner of the Nobel Prize for physics in 1981.

An excellent assortment of technical papers covering laser materials processing, laser microprocessing and nanomanufacturing will be compiled in a conference CD, while the business forum and panel discussion will assist all in strategic planning.

The strength and continued success of ICALEO and LIA is founded on the contributions and commitment of its board of directors and officers. So please review and vote for the nominees that will sustain the excellence and growth of your organization. We look forward to having many interactions with you at ICALEO 2010.



Nathaniel Quick  
President  
Laser Institute of America

## EXECUTIVE DIRECTOR'S MESSAGE

### Pillars of the World of Lasers



As I was thinking about ICALEO<sup>®</sup> and the 50<sup>th</sup> anniversary of the laser it occurred to me how lucky we are at LIA. Without Charles Townes, Arthur Schawlow and Theodore Maiman there would probably be no laser and no need for a Laser Institute of America. In fact, Theodore Maiman and Arthur Schawlow were among the founding directors of LIA and Professor Schawlow, for whom our highest award is named, attended ICALEO on many occasions.

This year, Professor Townes will attend ICALEO for the second time and the Schawlow award will be presented to U.S. Secretary of Energy and Nobel Laureate Steven Chu. We will be further honored this year by the presence of laser pioneers Robert Hall, inventor of the diode laser and Kumar Patel, inventor of the CO<sub>2</sub> laser (and 1984 Schawlow awardee). They, together with laser luminaries David Sliney (2005 Schawlow awardee), Marshall Jones (2007 Schawlow awardee) and William Lawson will be speakers at the closing plenary session where they will share their visions on lasers, past, present and future together with their personal struggles and triumphs.

ICALEO 2010 will be a unique opportunity to be in the presence of this pantheon of great men and to learn from them as they share their decades of wisdom and experience. I intend to be there, how about you?



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

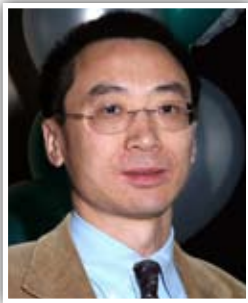
# ICALEO 2010 CELEBRATES ALL THINGS LASER

# ICALEO®

29<sup>th</sup> INTERNATIONAL CONGRESS ON  
APPLICATIONS OF LASERS & ELECTRO-OPTICS

The International Congress on Applications of Lasers & Electro-Optics (ICALEO®) has a 28-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.

LIA is pleased to announce that the 29<sup>th</sup> ICALEO will be held Sept. 26-30, 2010 at the Anaheim Marriott in Anaheim, Calif. ICALEO 2010 will include three conferences, the Laser Materials Processing Conference, the Laser Microprocessing Conference and the Nanomanufacturing Conference as well as the Laser Solutions Short Courses, a business forum and plenty of networking opportunities. This year's conference will feature a celebration of the 50<sup>th</sup> anniversary of the laser and the presentations of the 2010 Arthur L. Schawlow Award to Dr. Steven Chu, U.S. Secretary of Energy, and a Lifetime Achievement Award to Dr. Charles H. Townes.



**ICALEO General  
Chair Xinbing Liu.**

Congress General Chair Xinbing Liu of Panasonic Boston Laboratory, Cambridge, Mass., said, "As we celebrate the 50<sup>th</sup> anniversary of the invention of the laser that created the entire science, technology and industry in which we work, and in continuing

the tradition that began 28 years ago, the ICALEO Program Committee has put together yet another strong program with a high number of contributions from researchers from both academia and industries all over the world in areas of traditional and emerging laser applications."

## ICALEO ADVANCE PROGRAM AVAILABLE, REGISTRATION OPEN

The Advance Program for ICALEO 2010 is now available. The Advance Program provides details for the technical sessions, poster presentations, vendor tabletop display and reception and short courses offered during ICALEO.

Additionally, registration for ICALEO is now open and various sponsorship and vendor opportunities are still available. Visit [www.ICALEO.org](http://www.ICALEO.org) to download the Advance Program, to register and to learn more about sponsorship or vendor opportunities, contact Dave Evans at 1-800-34-LASER or e-mail [devans@laserinstitute.org](mailto:devans@laserinstitute.org).

## INTERESTING AT ICALEO

This year's plenary session will feature an environmental theme, with a keynote by Jeff Morris, National Program Director for the Nanotechnology Office of Research and Development, U.S. Environmental Protection Agency. Morris will present EPA's viewpoint on being smart about the development and deployment of new technologies. Other plenary session presentations will cover progress on laser and processing technologies used in various fields.

ICALEO's three conferences will cover an array of laser applications. The Laser Materials Processing Conference (LMP), organized by Klaus Löffler, continues its theme on high speed, efficient and flexible macroscopic laser processing applications and equipment and systems. With the 50<sup>th</sup> anniversary of the laser, the time is right to regain momentum even for one of the first laser applications, "laser cladding." This year's LMP has once again experienced a high number of submitted abstracts. This is especially exciting with the prospective of opening up new markets, thus increasing the number of abstracts outside the traditional application fields. Sessions include challenges of high brightness lasers, hybrid laser welding, materials and processes of laser metal deposition and direct laser manufacturing.



**LMP Chair Klaus  
Löffler.**

The Laser Microprocessing Conference (LMF) is chaired by Kunihiko Washio and will cover processes and systems for microscopic applications, especially those that take advantage of the small feature sizes and high precision offered by short wavelength and ultrafast lasers. The application fields of laser microprocessing are rapidly growing and as a result, short and ultrafast laser processing will continue to be a major topic. This year's LMF will have technical sessions on various topics including picosecond and femtosecond laser processing, advanced lasers and optical systems for microprocessing, pulse-shape and tailored-beam control of laser interaction and laser processing of silicon solar cells. Other topics include microjoining, micromachining and drilling, chemical and media-assisted laser processing, micromachining of brittle materials, microprocessing of glasses and other transparent materials and biomedical applications.



**LMF Chair Kunihiko  
Washio.**

This year's Nanomanufacturing Conference is co-chaired by Yongfeng Lu and Xianfan Xu. Much progress has been achieved in laser direct writing for nano-machining, nanofabrication using femtosecond lasers and laser-assisted growth of nanostructures. This conference will highlight research in emerging nanomanufacturing technologies in 3-D micro/nanomachining, holographic and 2-photon lithography, surface nanostructuring and laser-assisted growth and epitaxy. These studies encompass a variety of applications, including dynamic study of micro-organisms, photonic crystals, nanofluidic devices, opto-fluidic and scaffolding devices and nanoscale plasmonic structures.

The Poster Presentation Gallery will also be a feature of the conference. The gallery will provide an opportunity for presenters to exhibit their research and share ideas with other professionals who have interest in laser materials processing. The Student Paper Award Contest is LIA's way of showing appreciation for student contributions to ICALEO. This award gives students a chance to have their work recognized and evaluated by an international panel of laser and photonics experts. Cash awards will be presented to first, second and third place winners in addition to having their papers submitted to LIA's *Journal of Laser Applications*® for peer review and publication.

## IT'S JUST BUSINESS

The ICALEO Business Forum & Panel Discussion provides attendees with an exclusive opportunity to listen to and interact with industry experts, business leaders and decision makers on significant issues facing the laser and photonics industry. In keeping with the theme of ICALEO 2010 celebrating the 50<sup>th</sup> anniversary of the laser, this year's panel discussion, organized by Neil Ball and Sri Venkat, will look back at the key accomplishments of the past 50 years of lasers and attempt to project what the future holds for the laser industry.

For the first time, the Laser Solutions Short Courses, chaired by Stefan Kairle, will be held within a full day session prior to the main conference so every participant has the chance to attend this event. This day offers delegates an opportunity for a technical refresher or an insight into a new area of industrial photonics with the chance to attend a number of "hot-topic" solutions courses. A series of short courses taught by industrial photonics experts will address fundamentals related to lasers, optics, material processing and applications. These short courses have been chosen to complement the other ICALEO activities and the LIA experience.

## THAT'S NOT ALL

Besides providing a wealth of technical information through its conferences, ICALEO 2010 offers plenty of networking and social opportunities as well. Sunday night's Welcome Celebration is a fun and festive time featuring live entertainment. The next night's President's Reception is hosted by LIA President Nathaniel Quick and is where attendees can meet the LIA Executive Committee, Board of Directors and ICALEO chairs.

After completion of the technical sessions on Tuesday, enjoy drinks and hors d'oeuvres while sharing product ideas with your colleagues and suppliers at the Laser Industry Vendor Reception & Tabletop Display. This event gives exhibitors and conference attendees the opportunity to discuss equipment and applications in a relaxed setting.



## IN CLOSING

Like every other laser-related conference this year, ICALEO is celebrating the 50<sup>th</sup> anniversary of the invention of the laser. To mark 50 years of this truly paradigm changing scientific and technological discipline, LIA is organizing a special closing plenary session. Four laser industry veterans with distinguished careers and long association with ICALEO will be speaking at the session: Dr. Kumar Patel, inventor of carbon dioxide laser and winner of LIA's Schawlow Award in 1984; Dr. David Sliney, a pioneer in laser safety and laser-human interactions and Schawlow Award recipient in 2005; Dr. Marshall Jones, an early industrial laser applications developer and Schawlow award winner in 2007 and Bill Lawson, a veteran entrepreneur in employing laser processing technology in production. They will share their vision and outlook on the past, present and future of laser science, technology and industry. They will also share their personal stories – both triumphs and struggles – of working with the laser. This will be a rare opportunity to hear about laser history directly from the people who made it.

Whether you are a research scientist, an industrial engineer, a professional in the laser business, a student of laser physics and electro-optics or just someone who is intrigued by the frontiers of laser technology and the future of alternative energy, you won't want to miss this extraordinary gathering of some of the top minds from all corners of the laser and photonics field. For more information about ICALEO 2010, to view the full advance program and to register, visit [www.icaleo.org](http://www.icaleo.org). ■

## ICALEO HONORS INDUSTRY GREATS

LIA will present its first Lifetime Achievement Award to laser pioneer Dr. Charles Townes and the Schawlow Award to Dr. Steven Chu at the 29<sup>th</sup> International Congress on Applications of Lasers and Electro-Optics (ICALEO® 2010), which will be held in Anaheim, Calif. Sept. 26-30.

Townes, 94, won the Nobel Prize for physics in 1964 "for fundamental work in the field of quantum electronics, which has led to the construction of oscillators and amplifiers based on the maser-laser principle," according to the Nobel committee. The then-provost and professor of physics at the Massachusetts Institute of Technology shared the award with Nicolay Basov and Aleksandr Prokhorov of the USSR. Their work was among the critical early steps in the development of the laser, which is 50 years old this year.

LIA will also present U.S. Energy Secretary Steven Chu with the 2010 Arthur L. Schawlow Award. Chu, co-winner of the 1997 Nobel Prize in physics for development of methods to cool and trap atoms with laser light, will receive the honor during a luncheon Sept. 29 and speak during the event. Laser pioneer Schawlow nominated Chu for the Nobel while the two were colleagues at Stanford University.



Dr. Charles Townes



Dr. Steven Chu



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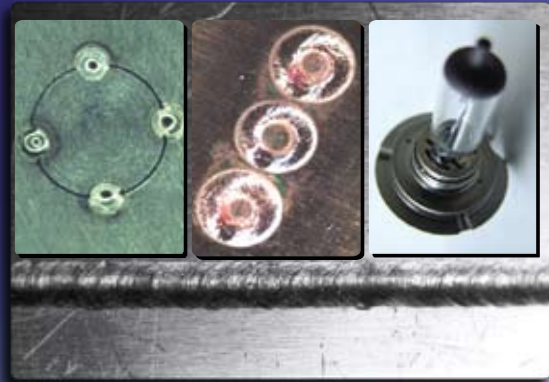
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## Revised ANSI Z136.4 – 2010 Recommended Practice Is Now Available

The revised *ANSI Z136.4 – 2010 American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation* is now available from the Laser Institute of America (LIA). The recommended practice summarizes common procedures for taking optical measurements for the purposes of laser hazard evaluation and provides guidance for the individuals who take these measurements. This publication is intended as a supplement to *ANSI Z136.1 – 2007 Safe Use of Lasers*, the parent document and cornerstone of the ANSI Z136 series of laser safety standards.

*ANSI Z136.4* is an important resource for laser safety officers and other individuals responsible for conducting hazard evaluations to ensure that appropriate control measures are in place. A committee of laser safety experts brought together by mutual concern for the proper understanding of laser measurements collaborated over a period of several years to produce this recommended practice. The insight shared by these experts will be invaluable for laser professionals who are responsible for making these calculations that are vital to working with lasers safely.

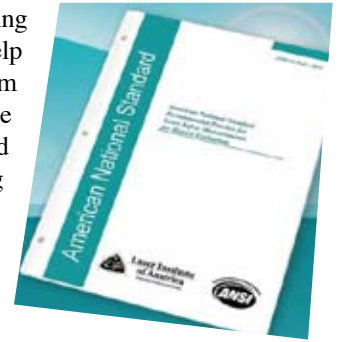
This document will prove especially useful for individuals who do not have access to the manufacturer's specifications for a particular laser system or do not want to use manufacturer's specifications. Oftentimes, OEMs will alter a laser or laser system, resulting in the need to recalculate laser safety measurements,

such as laser output parameter, beam shape, pulse duration, beam divergence, optical density, etc.

Laser manufacturers who anticipate that the Department of Defense or other agency will conduct an audit of their system will also want to refer to the *ANSI Z136.4* recommended practice. Following the guidelines found within will help to ensure their laser or laser system meets the parameters set forth by the RFP, thereby passing inspection and increasing the chances of winning the contract.

When conducting laser evaluations, the first priority of most laser manufacturers is gauging the performance of their systems. However, sometimes a manufacturer will want to analyze their laser systems with an emphasis on safety, and in this case the *ANSI Z136.4* will be an important reference document.

The 2010 version of *ANSI Z136.4* contains significant revisions, including many new and updated definitions, as well as improved and added examples throughout. (con't page 12)



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# LAM

LASER ADDITIVE MANUFACTURING  
WORKSHOP

February 16-17, 2011

Sheraton North Houston Hotel • Houston, TX USA

## SAVE THE DATE

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 & rapid manufacturing) to today's manufacturing challenges. LAM 2011 offers quality technical sessions and networking opportunities to discuss equipment and applications with vendors and your peers.

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**Laser Institute  
of America**

*Laser Applications and Safety*

Photo courtesy of TRUMPF - Fraunhofer ILT  
3-Jet Powder Nozzle for Cladding Heads

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## REVISED ANSI Z136.4 CONT FROM PAGE 10

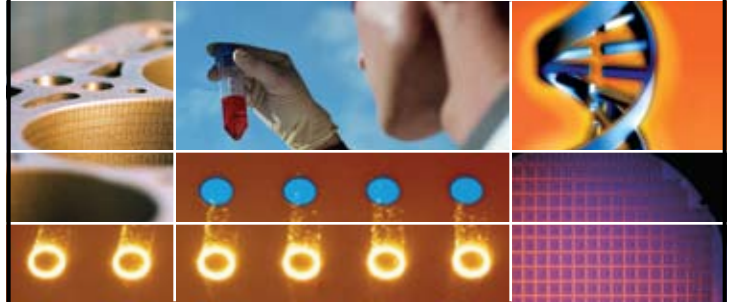
These changes serve to clarify and expand upon the information provided in the 2005 version of this document. The recommended practice has been aligned with the revised *ANSI Z136.1 – 2007* standard. It includes updated references in regards to laser hazard classification, so that all hazard levels that appear in the publication reflect the new classification scheme.

Several sections have been added, including a noteworthy section on M-squared ( $M^2$ ).  $M^2$  is a measurement that shows the relative quality of a laser beam, as compared with a perfect Gaussian beam. The concepts and calculations involved in this new section are particularly helpful in determining the nominal ocular hazard distance (NOHD) when the laser beam's quality is less than perfect.

The Z136 series of standards and recommended practices are developed through a consensus standards development process approved by the American National Standards Institute (ANSI). The process brings together volunteers representing varied viewpoints and interests to achieve consensus on issues related to laser safety. As secretariat to Accredited Standards Committee (ASC) Z136, the LIA administers this process and oversees the publication of the standards as well as recommended practices.

Order your copy of the *ANSI Z136.4 – 2010 American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation* today for only \$172 for non-members and \$152 for LIA members. It is available as a hard copy or in electronic format. Contact the LIA at 1-800-34-LASER or visit [www.laserinstitute.org](http://www.laserinstitute.org) for more information. ■

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## CORPORATE MEMBER PROFILE

## TRUMPF INC. LASER TECHNOLOGY CENTER

The TRUMPF Group, headquartered in Ditzingen, Germany, is a world market and technology leader in the area of industrial lasers and laser systems. With 60 subsidiaries in more than 26 countries, TRUMPF Group has about 8,000 employees and generates sales in excess of \$2.28 billion. TRUMPF Inc., headquartered in Farmington, Conn., is the North American subsidiary of TRUMPF GmbH +Co. KG, and with approximately 700 employees is the largest subsidiary within the TRUMPF Group and is one of the largest manufacturers of fabricating machinery in the U.S. TRUMPF Inc. is dedicated to serving the American, Canadian and Mexican market needs of fabricating machinery, OEM laser and laser marking. TRUMPF's Laser Technology Center in Plymouth, Mich., is part of TRUMPF Inc. The Laser Technology Center specializes in pulsed and continuous wave (cw) solid-state lasers and CO<sub>2</sub> lasers for multi-axis laser systems, stand-alone and integrated OEM lasers.

### COMPANY HISTORY

The company was founded in 1923 when Christian Trumpf and two partners acquired Julius Geiger GmbH, a machine shop in Stuttgart, Germany that made flexible shafts for dental and printing uses. In 1957, TRUMPF patented the coordinate guidance system for metal sheets, which was the starting point for the NC controller for the laser machine.

In 1960, the year Theodore Maiman generated the first laser light in the U.S., TRUMPF was referred to by one trade magazine as the "nibbling king" in the growing market of modern, flexible sheet metal processing. Fast forward to the year 1989, when TRUMPF introduced the folded high performance CO<sub>2</sub> laser, which is still today's best-selling multi-kilowatt laser. And in 2009, TRUMPF launched its first highly brilliant, multi-kilowatt industrial laser with high performance laser diodes as a direct beam source.

TRUMPF's presence in North America is the result of an enterprising young design engineer, Berthold Leibinger, who was convinced the company should open an office in a country where the market was still untapped for TRUMPF machine tools. He persuaded the company's president to let him travel to the U.S. and the result was the launch of the location in Farmington in 1969. Due to his foresight and ingenuity, Professor Leibinger became president and managing partner of the TRUMPF Group, a privately-owned, family-operated business. Today, his children and son-in-law now serve as the TRUMPF Group's senior management team.

# TRUMPF

### TODAY'S COMPANY

As a company, TRUMPF holds significant industry patents and dedicates about 10 percent of its sales revenue to research and development initiatives. Last year, about \$212 million was spent on R&D. These investments of time and money are making huge impacts on today's industries.

"One of the most dramatic impacts on sheet metal welding is the development of remote welding technologies. TRUMPF's TruDisk laser combined with our PFO (programmable focusing optic) is the optimum solution for this application. The high power and high beam quality of the TruDisk combined with the precision high speed optical beam positioning of the PFO allow cycle times for laser welding to be dramatically decreased. One welding on-the-fly robot equipped with a TruDisk laser does the work of three to four conventional laser welding robots, and up to 10 resistance spot welding robots. We see remote welding as one of the fastest growing application segments in a variety of industries," said TRUMPF Manager of Products and Applications David Havrilla.

"The industry continues to demand further improvements in laser reliability and quick field repair along with reduction of scheduled maintenance requirements. In response, the latest product releases from TRUMPF take all of these principles to a higher level. All products from the TruMicro nano-second and pico-second pulsed lasers to the TruDisk CW lasers incorporate a robust construction with a totally modular design, long life diodes, tele-diagnostics and are fully field repairable, and in most cases field upgradable in terms of power and the number of fiber outputs," said Havrilla.

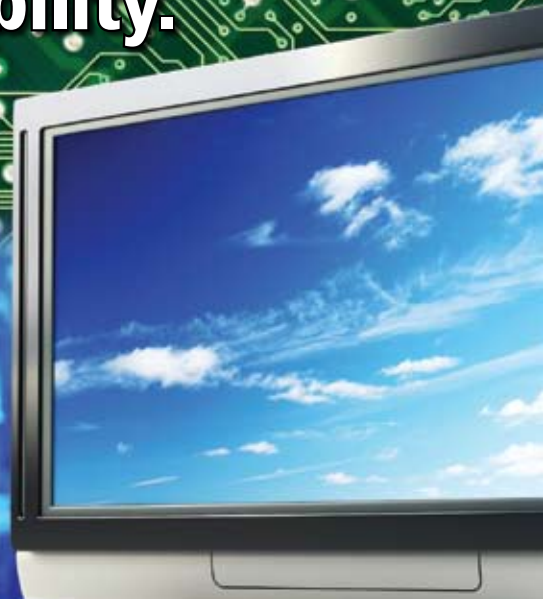
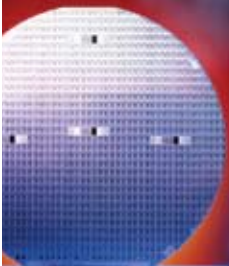
TRUMPF is also staying on top of other trends. According to Timothy Morris, general manager of TRUMPF's Laser Technology Center, "In the last five years, we have seen significant growth in the use of hot-formed steels for automotive body construction. As a result of the difficulty in trimming these materials with conventional methods due to the hardness, the use of our TruLaser Cell 7000 series multi-axis cutting systems has expanded dramatically. In previous years these were traditionally supplied with CO<sub>2</sub> lasers. However, with the advancement of high-powered solid-state lasers, particularly the TRUMPF TruDisk, the trend is now moving to solid-state lasers for these systems."

A corporate member of LIA since 2001, TRUMPF sees great value in its membership. "Laser technology has contributed considerably to the advancement of society. It has improved the lives of millions of people during the first 50 years of its invention. It is important for those of us in the industry to continue to work together to encourage innovation and safety. LIA brings diverse companies together for the common goal of advancing a technology that has completely revolutionized the world," said Morris.

For more information, visit [www.us.trumpf.com](http://www.us.trumpf.com). ■



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# BLS UPDATE

At the 2009 Health Physics Society (HPS) meeting in Minneapolis, Dr. David Sliney received the Distinguished Achievement Award. During his acceptance speech, he noted “there didn’t seem to be many papers on non-ionizing topics, including laser safety.” His comments inspired several CLSOs to consider ways to increase the number of laser safety presentations at the next HPS meeting.

Fast-forward to June 2010, the BLS mounted a concerted effort to increase the profile of laser safety at the 55<sup>th</sup> Annual Meeting of the HPS. CLSOs Myungchul Jo and Dewey Sprague organized and chaired the Board of Laser Safety Special Session, the first ever at an HPS meeting. The session featured the following four invited presentations by CLSOs:

- What Health Physicists should know about Lasers, Laser Safety and Why – Ken Barat
- Radiation Safety across the Electromagnetic Spectrum – the Challenges of the National Ignition Facility (NIF) – Jamie King and Dewey Sprague
- Expected Revision of Laser Maximum Permissible Exposure Limits – David Sliney
- The Board of Laser Safety’s Certified Laser Safety Officer Program – Ben Edwards

CLSOs also conducted three Professional Enrichment Program (PEP) two-hour classes on various aspects of laser safety and optical radiation safety, which were all well attended and reviewed. In addition, two related laser safety presentations

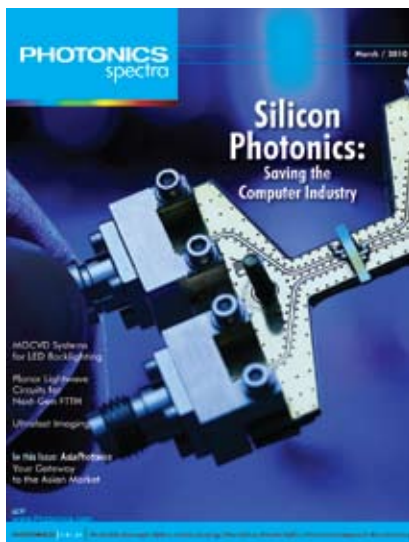
were given in the Accelerator Section Special Session I – Light Sources and FELs.

“The BLS Special Session ranked very well in attendance,” stated Ben Edwards, HPS program committee member and 2010 task force chair. “We had the largest laser safety footprint in years, in terms of numbers of presentations and short courses.” ■

## JLA UPDATE

The *Journal of Laser Applications*<sup>®</sup> offers the latest refereed papers by leading researchers in the laser community. Visit [www.laserinstitute.org/subscriptions/jla](http://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>.



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# ASC Z136 UPDATE

**Call to Action!** ASC Z136 and subcommittee members now is the time to submit your abstracts for the 2011 International Laser Safety Conference (ILSC®) to be held in San Jose, Calif. March 14-19.

At this comprehensive four-day conference that covers all aspects of laser safety practice and hazard control, the scientific sessions that are the foundation of ILSC (hence previously referred to as "ILSC"), will now be termed Laser Safety Scientific Sessions (LSSS). These sessions will address developments in regulatory, mandatory and voluntary safety guidelines for laser products and for laser use. Laser safety experts from all over the world will meet and discuss their research, programs and standards.

The Practical Applications Seminars (PAS) complement the scientific sessions by exploring everyday scenarios that the LSO (laser safety officer) and MLSO (medical laser safety officer) may encounter. New for 2011, PAS will be increased to four days, expanded to include the medical community. These seminars will be termed Medical Practical Applications Seminar and Technical Practical Applications Seminar.

The Medical PAS will be led by Vangie Dennis, RN, CNOR, CMLSO from Gwinnett Medical Center, Duluth, Ga. This seminar will be particularly useful for MLSOs who work in operating rooms, surgical centers, aesthetic clinics and medical

spas. Participants will benefit from the cutting-edge medical laser safety presentations that will be showcased.

The Technical PAS will be led by Sheldon Zimmerman, CLSO, from the Naval Surface Warfare Center, Dahlgren, Va. This seminar will continue to provide valuable practical information to those who are concerned with the more common safety issues of day-to-day operations in commercial, factory and research settings.

Submit your abstracts for LSSS through the ILSC website at [www.laserinstitute.org/ilsc](http://www.laserinstitute.org/ilsc). The abstract submittal deadline is August 15, 2010. Sessions under consideration include safety standards, laser safety training, laser eye protection, high power issues, bioeffects and hazard and risk assessment. Suggestions for the Medical or Technical Practical Application Seminars can be submitted through the abstract submittal system as well, please notate the appropriate seminar. ■



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# SAFETY LASER CORNER

## TOOLS OF THE LASER SAFETY TRADE – ANALYZING LASER BEAM

In the last article we described the tools you need to find the laser beam. Now let's talk about the tools to help you analyze the laser beam.

The first tool is the power meter or the energy meter. Meters are used for precise measurement of laser power or energy. These devices contain sensors that detect heat or that convert light into an electric current. Measurement information is displayed digitally via an LCD screen or with older models of meters, an analog display.

The second tool is hazard evaluation software. Software will help make calculations for maximum permissible exposure (MPE) limits, nominal hazard zones (NHZ) and optical density (OD) easier. You will want to look for a user-friendly interface, the ability to print out reports and save your laser hazard calculations. Remember that this software should be used to verify your calculations. It is not intended to be used as a replacement for a knowledgeable laser safety officer. Meters will help you determine laser parameters. The laser parameters can in turn be used in your laser hazard evaluation software to determine MPEs, NHZs and ODs for your lasers. ■

## LIA'S EDUCATION EXPOSURE

The January 2010 issue of *Laser Community*, the laser magazine from TRUMPF, contained an article titled, "Wear Your Goggles!" that featured an interview with LIA Education Director Gus Anibarro. In the article, Anibarro discusses the importance of laser safety and the role LIA plays in educating laser safety officers who in turn keep other employees safe. Advancements in protective equipment are discussed, as is LIA's laser safety course offerings and the role certification now plays. To view the issue in its entirety, visit [www.laserinstitute.org/uploads/pdf/LaserCommunity\\_1-2010\\_LIA\\_Gus\\_Anibarro.pdf](http://www.laserinstitute.org/uploads/pdf/LaserCommunity_1-2010_LIA_Gus_Anibarro.pdf).

This type of positive exposure for laser safety corresponds exactly with LIA's mission of fostering lasers, laser applications and laser safety worldwide. LIA is pleased to have collaborated with TRUMP on this interview.



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# 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](http://www.laserinstitute.org/laserinsights) to begin your search, or use the direct link provided below for each paper.*

## HIGH RATE LASER DRILLING AND TEXTURING OF SILICON, by Henrikki Pansar,

*Tim Lauterborn, Annerose Knorz, Hans Herfurth, S. Heinemann*  
The greatest challenge for photovoltaic solar cells is to reduce the price per watt for terrestrial applications. In silicon panel production this can be accomplished by economies of scale, developing automation, improving cell efficiency and reducing material costs either by using thinner wafers and/or lower-quality materials.

## HIGH POWER RATE FEMTOSECOND LASERS AND NOVEL DYNAMICS..., by Andreas Tünnermann

There is a strong need for advanced micro machining tools due to the increasing miniaturization of components and systems. Application examples include the drilling of fuel injection nozzles or the structuring of thin film solar cells. However, pulsed laser systems are replacing conventional tools for micro machining.

## LASER CUTTING OF PAPER MATERIALS, by Heidi Piili

Laser technology has been applied to paper cutting since the 1970s. Mainly the application of laser technology are in paper slitting applications, even though paper materials can be laser cut with high cutting speeds and good quality. The combination of laser and paper has been studied over 30 years, but implementation of laser technology in the paper industry has remained limited; this situation changed in the 1990s.

## ULTRA SHORT PULSES ALIGN NANO-SCALE COMPONENTS..., by Peter Bechtold

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

View complete articles at [www.laserinstitute.org/laserinsights](http://www.laserinstitute.org/laserinsights) under the Laser Machining Category.

## High Power Fiber Optic Components

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- Shanghai Jue Hua Laser Technology, Shanghai, Peoples Republic of China
- Tribocor Technologies, Inc., Stafford, TX

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

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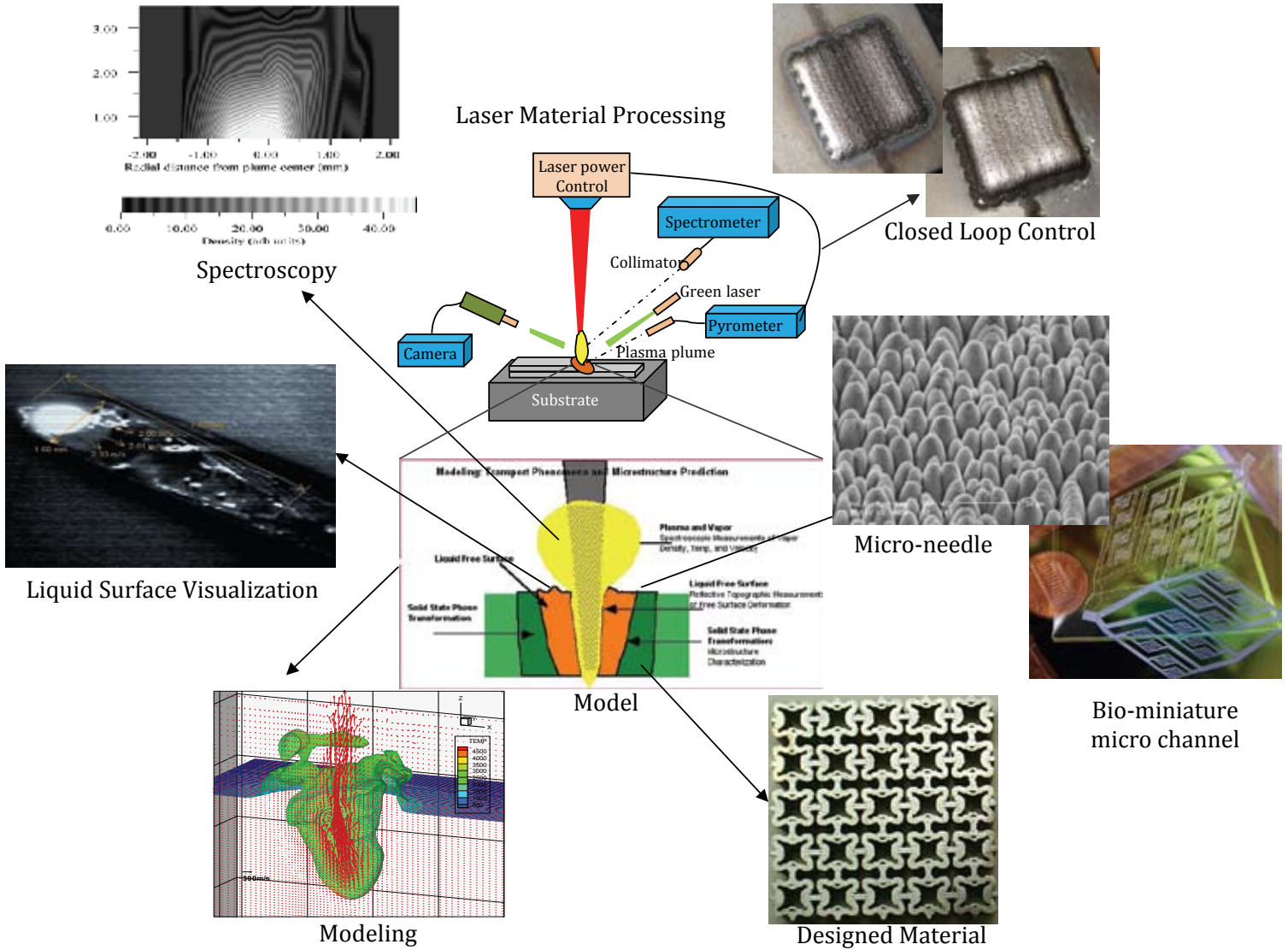
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# MEMBER INNOVATIONS

## LINE EXPANDED, AMP ADDED

Coherent, Inc., Santa Clara, Calif., has increased its range of CUBE™ FP fiber pigtailed diode laser products with the addition of several new wavelengths and output power levels. CUBE FP lasers are now available at the wavelengths 405 nm (50 mW), 445 nm (25 mW), 488 nm (30 mW), 640 nm (30 mW and 75 mW) and 660 nm (75 mW). All CUBE FP lasers are compact, hands free, diode laser-based systems that never require realignment and deliver stable output power throughout their lifetime.

A new Ti:Sapphire ultrafast laser amplifier has also been introduced by Coherent. The Legend Elite Duo-HP offers over 15 Watts of output power and the highest pulse energy (up to 10 mJ) currently on the market for a kHz class, thermoelectrically (TE) cooled amplifier. Legend Elite Duo-HP can be configured to provide output pulse durations of <25 fs, <35 fs, <130 fs, or 0.5 ps to 2 ps with repetition rates in the range 1 kHz to 10 kHz.

For more information on either, visit [www.Coherent.com](http://www.Coherent.com).

## OPHIR-SPIRICON INTRODUCES APPLICATION

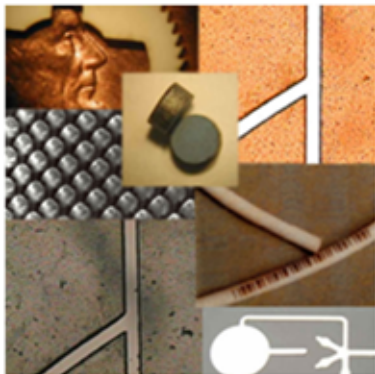
Ophir-Spiricon, Logan, Utah, has introduced the Sensor Finder, an online application that helps users find the best laser power/energy sensor guaranteed to work with their laser. Featured on the Ophir site, Sensor Finder allows users to input

laser characteristics and the type of measurement required (power only or energy and power). In return, the program provides a list of Ophir-Spiricon power/energy sensors that are guaranteed to work with their laser under the stated conditions. Sensor Finder calculates and displays the power and energy density of the laser, the damage limit of the sensors under these conditions, and determines which sensors are guaranteed to perform with the laser specs. A report with a list of recommended sensors can be saved or printed. Visit [www.ophir-spiricon.com](http://www.ophir-spiricon.com) for more information.

## NEWPORT INTRODUCES ROTATION STAGES, MOUNT

Newport Corporation, Irvine, Calif., has introduced the URS50BCC and the URS50BPP precision rotation stages that feature 360 degrees, continuous motion. The URS50BCC and the URS50BPP provide backlash-free, continuous rotation with extremely high MTBF (up to 20,000) and very low wobble. The new stages feature the smallest footprint (50 mm size) and very affordable pricing, while maintaining the high performance of Newport's URS motion product family. The URS50B's feature a unique, two-part bearing design with pre-tempered steel gears and bearings, to ensure precision and long-life motion positioning. For more information, visit [www.newport.com/URS50](http://www.newport.com/URS50). ■

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Just in time for the summer, LIA is here to offer you great products at low prices to make sure your laser safety library is complete and up-to-date! Introducing LIA's Industrial Laser Safety Package — the one-stop shop for all of the needed information and references for any person responsible for putting together a laser safety program for their facility in the industrial field. Included in this package is the *ANSI Z136.1 – Safe Use of Lasers* standard, the parent document and cornerstone of the Z136 series of laser safety standards. The ANSI Z136.1 (2007) provides guidance for the safe use of lasers and laser systems by defining control measures for each of the four laser classes.

Also included in this package is the *CLSOS' Best Practices in Laser Safety* — a compendium of procedures, policies and practical advice to be used by laser safety professionals; *LIA's Laser Safety Guide* — a handbook for all laser personnel outlining potential hazards for all types of lasers that provides easy to understand guidelines for controlling laser hazards and lastly *LIA's Guide for the Selection of Laser Eye Protection*, which is designed to aid the laser user in selecting adequate protection and finding appropriate eyewear products, featuring a simplified five-step process for determining the correct type of laser eye protection.

LIA's Industrial Laser Safety Package special gets you everything for only \$300, about a 25 percent discount. Visit [www.laserinstitute.org/promotions/indpack10](http://www.laserinstitute.org/promotions/indpack10) or call 1-800-34-LASER today to order. Sale applies to publications currently in stock and only while supplies last. No other discounts apply. Does not apply to quantity discounts. Offer good for a limited time only.

## LIA LAUNCHES "FAST-TRACK" COURSE FOR CO<sub>2</sub> MEDICAL LASER SAFETY TRAINING

LIA has recently added the CO<sub>2</sub> Medical Laser Safety Course to its growing selection of Web-based education programs. Developed specifically for nurses in the operating room, surgical technicians and circulating nurses, this program will provide the foundation needed to practice optimal laser safety when working specifically with CO<sub>2</sub> lasers, one of the most popular lasers used for medical applications in operating rooms, ambulatory surgical centers and private practices.

"We designed the course to be both comprehensive and convenient. The Web-based format in combination with the shorter duration of the course makes it more accessible for busy medical professionals," stated LIA Education Director Gus Anibarro. "With a growing number of medical professionals using the CO<sub>2</sub> laser in more surgical procedures, the demand for this specialized training continues to increase."

Students will have the opportunity to study laser biophysics and tissue interactions specifically for the CO<sub>2</sub> laser, review laser safety standards from ANSI Z136.3 *Safe Use of Lasers in Health Care Facilities* and the Association of Perioperative Registered Nurses, review recommended practices for CO<sub>2</sub> laser applications and more.

"While this basic-level program is designed for medical staff

without any prior laser safety training, we encourage advanced medical laser safety officers to take this course because it provides a comprehensive overview specific to the CO<sub>2</sub> laser," Anibarro added.

The CO<sub>2</sub> Medical Laser Safety Course is available online and takes two hours to complete. Successful completion of the course will provide two contact hours. For more information or to enroll, visit [www.laserinstitute.org](http://www.laserinstitute.org).

## SIGN SALE!

One of the most important aspects of implementing a successful laser safety program is displaying proper signage. According to ANSI Z136.1 *Safe Use of Lasers in Health Care Facilities*, laser area warning signs should be posted around Class 2M and 3R laser areas, and are required to be posted around all Class 3B and 4 laser areas. LIA is currently offering great deals on available laser safety signs. For a limited time only, you can receive 20% off all plastic and blank signs. LIA is also selling the remaining aluminum and magnetic sign inventory for the low cost of only \$10 each. Order online at [www.laserinstitute.org/store](http://www.laserinstitute.org/store) with the coupon code LIASIGN10 to receive your discount. Aluminum and magnetic sign orders must be made by calling the LIA office at 1-800-34-LASER. ■



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