LIA TODAY

The Official Newsletter of the Laser Institute of America
The professional society dedicated to fostering lasers, laser applications, and laser safety worldwide.

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In The News...

Anti-Cancer Drug Observation

Researchers at Purdue University have designed a laser-based holographic imaging system to monitor what happens to a cancerous cell as an anti-cancer drug is administered, reported the Apr. 2 issue of *Optics.org*. According to David Nolte of Purdue, the experiment uses a technique known as digital holographic optical imaging to detect movements within a cell to a resolution of 100nm. The technique could have important uses in drug testing and biotechnology.

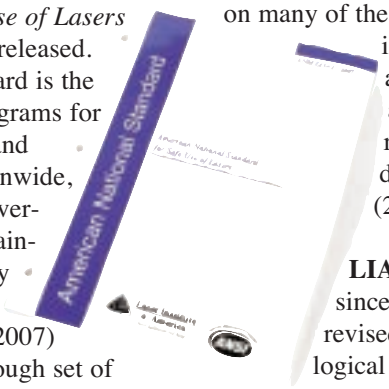
In the experiment, cancerous cells in a Petri dish are irradiated with light from a 800nm, 100fs titanium-sapphire laser. Light from the laser is split in two: a reference beam is directed to a CCD camera, while the other laser beam is directed towards the tumor. Light reflecting off the tumor then interferes with the reference beam to produce a hologram, which appears on a computer screen as a series of bright and dark speckled spots.

(Cont. on pg.19, see **In The News...**)

Behind the New Laser Safety Standard

by Stephen Lumbert

As a result of advances in laser devices and their applications both experimentally and in the field, the first update in seven years to the *American National Standard for Safe Use of Lasers* (ANSI Z136.1) has just been released. Since the ANSI Z136.1 standard is the foundation of laser safety programs for industrial, military, medical, and educational applications nationwide, any revisions to the previous version can and will affect the training and practice of laser safety in these environments. The new standard (ANSI Z136.1-2007) provides an updated and thorough set of guidelines for implementing a safe laser program. While researching the new standard, I had the privilege of interviewing Nikolay Stoev. Mr. Stoev is the president of Valkom Laser Consulting and is actively involved in national and international committees on laser safety and professional associations. He was on many of the committees charged with revising the ANSI Z136.1 standard and, as a member of the editorial group, he compiled a summary of the changes in the revised draft compared to the previous (2000) edition.



LIA: It's been about seven years since the ANSI Z136.1 standard was revised. Considering the many technological advances and new applications put to use since the last revision, are there any surprises in the new standard?

(Cont. on pg. 6, see **ANSI**)

ILSC Breaks Attendance Record

by Stephen Lumbert

The 2007 International Laser Safety Conference (ILSC® 2007) was over a month ago, yet its reverberations still resound. The comprehensive four-day conference, chaired by Ben Rockwell of AFRL/HEDO and John Tyrer of Loughborough University, Leicestershire, U.K., provided an excellent opportunity for attendees to participate in technical sessions, seminars, and workshops addressing the latest developments in regulatory, mandatory, and voluntary safety standards for laser products and for laser use. This year's conference set new records for attendance and participation. Attendance was up 45% over the 2005 conference.

The Plenary Session

ILSC® 2007 began with a fantastic two-part plenary session. First, Rockwell opened the plenary session with an overview of recent topics that have changed national and international laser safety standards. Next, Alfred Vogel from the Medical Laser Center in Lüebeck, Germany began the plenary session proper with his talk entitled "Mechanisms of Optical Breakdown in Aqueous Media with Femtosecond and Nanosecond Pulses, and their Consequences for Laser Safety." This comprehensive review of the fundamental mechanisms for retinal damage by pulsed laser irradiation detailed the effects of pulse duration ranging from milliseconds to femtoseconds and lesions close to the respective damage thresholds. Closing the plenary session was Rob Broderick

(Cont. on pg. 9 see **ILSC**)

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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 on 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.

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Laser Institute of America (LIA) is the professional society dedicated to fostering lasers, laser applications and laser safety worldwide. LIA is the secretariat and publisher of the ANSI Z136 series of laser safety standards, and is a leading provider of laser safety education.

LIA offers educational programs, conferences and symposia on the applications of lasers and electro-optics. LIA's annual International Congress on Applications of Lasers & Electro-Optics (ICALEO®) features the world's foremost meeting on laser materials processing. The biennial International Laser Safety Conference (ILSC®) covers all aspects of laser safety practice and hazard control.

If you would like more information about the LIA, call 407.380.1553, 1.800.34.LASER or visit our home on the Web: **www.laserinstitute.org**.

LIA's Calendar of Events

For more information, contact LIA at 1.800.34.LASER or visit ww.laserinstitute.org

Laser Safety Officer Training
July 16-18, 2007 • Raleigh, NC
Aug. 6-8, 2007 • Albuquerque, NM
Dec. 3-5, 2007 • Miami, FL

Laser Safety Officer with Hazard Analysis
Sept. 17-21, 2007 • San Francisco, CA
Oct. 29-Nov. 2, 2007 • Orlando, FL

Basics of Laser Safety
Oct. 11-12, 2007 • Memphis, TN

Laser Safety in the Lab
Aug. 20-21, 2007 • San Diego, CA

Medical Laser Safety Officer Training
Sept. 21-22, 2007 • San Francisco, CA
Nov. 9-10, 2007 • Raleigh, NC

Industrial Laser Safety
Aug. 16, 2007 • Sturbridge, MA
Nov. 8, 2007 • San Diego, CA

Advanced Concepts in Laser Safety
Sept. 24-26 • Silver Springs., MD

Medical Aesthetic Lasers & Light Technologies
June 30-July 1, 2007 • St. Louis, MO
July 7-8, 2007 • Baltimore, MD
July 14-15, 2007 • Atlantic City, NJ
July 21-22, 2007 • San Antonio, TX
July 28-29, 2007 • Minneapolis, MN

ICALEO® 2007
Oct. 29-Nov. 1 • Orlando, FL

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Executive Director's Message

Investment and Teamwork Made It Another Good Year For LIA

LIA Executive Director Peter Baker

As I reviewed our fiscal year, which ended March 31, it became clear to me that our dominant themes are investment and teamwork. Every year, in good times and bad, we consistently invest our time and treasure in the things that will keep LIA successful and growing. We have also forged a very effective team consisting of our members, board, officers and staff. It is interesting to note that five of the accomplishments listed below are new ventures that will contribute to our continued growth and success worldwide. Very exciting!

• We executed a contract to buy the Automotive Laser Applications Workshop jointly with the Fabricators & Manufacturers Association, Intl. (FMA). We added "Fabricators Day – Making Money with Lasers" to ALAW 2007 and increased sponsors from 17 to 26.

• We visited Beijing and Shanghai and met with Minlin Zhong and officials of the Laser Processing Committee of the China Optical Society (LPC-COS) to work on the PICALO 2008 program.

• ICALEO® 2006 was the biggest and best ever.

• We launched LIA Working Groups. These groups consist of mainly board members who work in specific areas such as membership, international activities and *Journal of Laser Applications®* to strengthen our activities in these areas.

• ILSC® 2007 marked the addition of a two-day Practical Applications Seminar for practicing laser safety officers. This was a huge success and contributed to record attendance and revenues.

• Thanks to President-Elect Andreas Ostendorf, LIA had a presence at LASER. World of Photonics China, which was held in Shanghai (LIA's Marketing Director Jim Naugle attended). LIA was a cooperating sponsor with LPC-COS, Laser Zentrum Hannover and Messe Munich for the associated conference International Conference on Laser Processes and Components.

• Work for the revised ANSI Z136.1 Standard for the Safe Use of Lasers was completed this year and it was published in May.

• President Bill Shiner's idea to provide a new corporate member benefit, the Laser Application Resource Guide (LARG), was developed this year and contributed revenue and profit. LARG was completed and mailed in time to be the final piece of the puzzle to make this fiscal year a success.

Needless to say, I am very pleased indeed with the performance of our LIA staff and very grateful for the calm and constructive leadership of the LIA officers and board. My thanks to everyone who helped make this another successful year for our society.

Peter Baker

pbaker@laserinstitute.org

ANSI , cont. from pg. 1

STOEV: There are a lot of changes, but most of them come as no surprise. The most significant technical change is the harmonization of the classification with the international IEC 60825-1 standard. The only surprise to me was the further expansion of the non-beam hazards section with the addition of control measures for each hazard category – physical, chemical, biological. Users will need to check both sections for applicable control measures – section 4 (for control of beam hazards) and section 7 (for control of non-beam hazards). In my personal experience, non-beam laser hazards (electrical, fire, chemical, etc.) are well covered by the existing workplace environmental health and safety policies and procedures, because similar hazards are caused by a variety of non-laser equipment performing similar functions. When an industrial facility replaces a plasma cutting or welding system with a laser system, there is hardly any change in the non-beam hazards. The main new concern is the beam hazard (especially if the beam is accessible during operation and/or maintenance).

Nikolay Stoev was on several committees responsible for updating the Z136.1.

LIA: How large was the committee that formulated these changes?

STOEV: The revised draft standard was the effort of subcommittee SSC-1 Safe Use of Lasers, which is the largest subcommittee with more than 60 members. Specific topics such as laser bioeffects, hazard evaluation and classification, control measures and training, non-beam hazards, and analysis and applications are addressed by the respective technical subcommittees (TSCs). Further, the draft is reviewed for consistency, accuracy, etc., by the editorial working group and eventually it's voted on by the members of the balloting group, who may also submit comments and suggestions for modifications, etc.

LIA: How often is the standard revised to keep pace with improvements and applications for lasers in the workplace and laboratory?

STOEV: The standards are normally revised on a five-year cycle, but this revision took longer due to the significant amount of changes throughout the standard including the normative sections, the revision of many of the tables, and the need to modify many examples in the informative Appendix B to bring them in line with the new classification scheme. The previous edition (2000) was published just one year before the IEC (International Electrotechnical Commission) standard introduced its new classification scheme in Amendment 2:2001. The same year, FDA/CDRH (Center for Devices and Radiological Health) issued its Laser Notice No. 50, allowing laser manufacturers to apply most of IEC 60825-1+A2 procedures and requirements in order to comply with 21 CFR 1040.10-11 applicable to laser product manufacturers in the U.S. So in some way, ANSI Z136.1-2000 fell behind fairly soon after being published.

The new classification scheme also required a revision of the testing and measurements procedures, the hazard evaluation approaches, and the control measures applicable to the different classes and introduction of some new definitions. Other definitions were modified or deleted. At the same time, certain concepts were re-assessed such as the requirement for medical surveillance, the laser safety programs and personnel requirements, training requirements, etc.

LIA: Comparing the revised ANSI Z136.1-2007 standard with the previous version (ANSI Z136.1-2000), some of the revisions seem to bring us into lockstep with conventional wisdom and common-sense practice. For example, there are some new definitions in the "Personnel" section (3.5). Are there any others that come to mind?

STOEV: To clarify the additions in the "Personnel" section, "Visitors" are added to the personnel categories that may be in the vicinity of a laser during operation and may influence the decision to adopt additional control measures. "Lasers in a research setting" were added to the specific group of applications, where the principal hazard control rests with the operator, whose responsibility is to avoid aiming the laser at personnel or flat mirror-like surfaces. Here are some additional examples stemming from common sense (not in order):

• 4.1.1.3 and 4.5.1.1 Relaxing the requirements for unsupervised operation of lower class lasers (a proper label is sufficient)

• 5.5 Laser safety training to include warnings against misuse of lasers

• 4.5 Bringing the alignment requirements to the normative section

• 4.3.1 User created enclosures must meet manufacturer requirements for protective housing, otherwise only considered as a barrier and the control measures applicable to lasers used without protective housing apply

• 1.3.3 Individuals involved in purchasing lasers and laser systems and individuals fabricating, altering or installing a Class 3B or 4 laser or laser system should contact the LSO to aid in the implementation of the laser safety program – especially helpful for large institutions such as universities, large research laboratories, etc.

• Definition of "eye-safe laser": A Class 1 laser product. The term "eye-safe" is often misused in the meaning "retina-safe" (e.g. around 1.5-1.6 μm); therefore the use of the term eye-safe laser is discouraged.

LIA: What is the purpose or intent of changing Section 6 from Medical Surveillance to Medical Examinations?

STOEV: The roots of this decision go back eight years, when the keynote speaker at the 1999 International Laser Safety Conference, Dr. John Marshall from the U.K., suggested that medical surveillance should be scrapped from the standard altogether. One of the arguments in favor of this change was that the limited information obtained during a surveillance test is very difficult to correlate to the detailed retinal tests following an actual or suspected laser injury. Another argument was that it

is difficult or almost impossible to determine with certainty the cause of some type of eye injuries – e.g. whether it was caused by a laser beam, a welding torch or from simply staring at the sun. Plus, strictly speaking, medical surveillance as required in the previous edition is not a control measure protecting the user.

"Surveillance" implies something done over an extended period of time, e.g. periodic testing to check for any problems. The requirement in the standard was a one-time baseline examination before starting work with a laser. Downgrading this requirement from "shall" to "should" in the standard does not prevent any organization from including this requirement in their laser safety program and continue conducting medical examinations.

LIA: Section 3 (3.4.1) added some text that allows the LSO some latitude in the area of nominal hazard zones. Specifically, "The LSO may declare the laser use area as the NHZ in lieu of calculating all possible NHZ distances, such as in the case of a dedicated laser use room." Could this apply in a large open facility where the laser use area has a small footprint in a larger open space?

STOEV: Obviously, in the case of a large open facility the LSO simply will not have the option to use this exception and will need to apply the usual procedure for determining the NHZ. However, if the laser use area can be physically isolated for example by barriers or partitions with adequate access controls, etc., and the accessible laser radiation is contained within the dedicated area, the LSO may still be able to apply the exception. The decision will also depend on whether the laser radiation can propagate upwards, whether the area has its own "ceiling", etc.

LIA: One of the changes to the standard is to amend the Laser Classifications to more closely reflect the classification scheme of the International Electrotechnical Commission (IEC 60825-1:2007). Why was this done?

STOEV: ANSI is a standard for laser users. Except for home-built lasers, which are not so widespread nowadays as they used to be, most lasers are commercial systems that comply with one or more manufacturer's standards, such as IEC 60825-1 internationally or 21 CFR 1040.10-11 (Federal Laser Product Performance Standard or FLPPS) in the U.S. As I mentioned before, FDA/CDRH now accepts the IEC 60825-1 classification scheme for compliance with the FLPPS and ANSI Z136.1 in turn accepts classification to FLPPS. As a result, users of the ANSI Z136.1 standard see a variety of equally acceptable classifications: 1, 2, 3a, 3b and 4 (ANSI Z136.1-2000); I, II, IIIA, IIIB and IV (FLPPS); and 1, 1M, 2, 2M, 3R, 3B and 4 (IEC 60825-1). It's logical for the user standards such as ANSI Z136.1 to reflect the classification used by manufacturers.

LIA: I am an LSO and I have a laser safety program based on the ANSI Z136.1-2000. What are the implications of the new standard for me? What do I need to do to comply with the new ANSI Z136.1-2007?

STOEV: First of all, I would consult the standard itself for specific details. Here are some areas that may need to be revised:

- Laser safety program and hazard evaluation:
  - Hazard evaluation procedures
  - Visitors and lasers in research setting
- Control measures:
  - Re-assessment of any user-created enclosures
  - Alignment procedures for laser classes 3B and 4
- Training requirements:
  - Refresher training
  - Non-beam hazards
- Medical surveillance

LIA: Finally, Appendix A, which details the major responsibilities and require-

Table 1 – Sample of Changes new to ANSI Z136.1-2007

The examples in this table are for general informational use only.
Please refer to the full standard for any and all safety or compliance concerns.

Section	Nature of Change
1.3.2	Specific LSO duties now mandated in a new, normative Appendix A.
3.3.1.3	New laser hazard classification definitions, including the new classes 1M, 2M and 3R.
3.4.1	Added text: "The LSO may declare the laser use area as the NHZ in lieu of calculating all possible NHZ distances, such as in the case of a dedicated laser use room" and "and [control measures] may fully enclose the NHZ when this area is limited in size."
3.5.2	Additions to define "Laser Personnel," now includes "visitors" and "research setting."
4.1.5	Power limit of 5mW for laser pointers is removed.
4.3.11 & 4.3.11.2	Outdoor control measures applicability, namely of measures for use of lasers in navigable airspace is expanded to include all laser classes.
4.6	Protective windows that are sold separately shall be labeled with the optical density and wavelength for which protection is afforded.
5.2	Moved requirement for refresher training from informative appendix D to normative section 5 of standard.
6	Section title change from Medical Surveillance to Medical Examinations to reflect the recommended practice, and the requirement ("shall") for medical surveillance is changed to advisory ("should").
7	Section reformatted. Non-beam hazards re-grouped based on nature of hazard.
Appendix A	New normative appendix including responsibilities/requirements for the LSO, the laser safety committee, workers and supervisors.

ments for LSOs, workers, supervisors, and safety committees, is presented as a "normative appendix". Is this intended to emphasize a prescriptive approach as opposed to the (possibly?) descriptive connotation in the previous standard (ANSI Z136.1-2000)?

STOEV: Yes, this is exactly the difference between a normative appendix and an informative one. Actually, "normative appendix" is one of the newly introduced definitions. Since we are on the subject, there are several other items that used to be "informative" in the previous edition, but were "promoted" to various normative sections. Examples include alignment procedures and refresher training.

LIA's Involvement

A small sampling of these changes (see table on page 7) includes a refined set of definitions, the expansion of laser classifications, and new provisions for refresher training, safety protocols, and changes in the medical surveillance requirements. While many of these revisions are a consolidation of similar items into a more cohesive body, some of these changes will require time and effort to ensure compliance with the new standard.

The *American National Standard for Safe Use of Lasers, ANSI Z136.1-2007,* is now here in part due to the continuing support of the Laser Institute of America (LIA). Fulfilling its mission of fostering lasers, laser applications, and laser safety worldwide, LIA is the secretariat and publisher of the American National Standards Institute (ANSI) Z136 series of laser safety standards. These documents provide a thorough set of guidelines for implementing a safe laser program. The ANSI Z136 series is recognized by OSHA and is the authoritative series of laser safety documents in the United States. LIA also offers a wide array of products and services to thousands of end-users, including safety and applications publications, training videos, signs and labels, laser safety officer training, and conferences. ✱

Stephen Lumbert is a freelance technical writer for LIA TODAY.

ILSC , cont. from pg. 1

from Lawrence Livermore National Laboratory in the U.S. with his presentation entitled "The National Ignition Facility – The World's First Megajoule Laser." His discourse summarized the progress on building the NIF laser – the world's largest and most complex optical system and Lawerence Livermore's approach to building and operating it safely. The National Ignition Facility (NIF) is presently under construction at the Lawrence Livermore National Laboratory (LLNL).

Conference Chairs Ben Rockwell (left) and John Tyrer.

NIF is a 192-beam Nd-glass laser system for studying inertial confinement fusion (ICF) and the physics at extreme energy densities and pressures. When completed in 2009, NIF will be able to produce 1.8 MJ, 500 TW of ultraviolet light for target experiments.

Additional Conference Adds Depth

Each day had both practical and advanced topics relevant to both laser safety experts and novices. According to Tyrer, this year produced one of the most successful International Laser Safety Conferences and represented an evolution of an already effective recipe with the addition of some exciting new ingredients.

"The response of delegates to this year's program was very positive and the venue, as always, was superb. Personally, I found the breadth and depth of this year's program particularly useful, and I think this mixture was the appeal that made ILSC® 2007 the highest attended conference," said Tyrer.

Recognizing that the conference and exhibition must be attractive to a broad base of expertise, the conference fulfilled this need with its comprehensive conference program, additional workshops, and especially through the inauguration of the seminal and the most talked about experience of ILSC® 2007 – the first joint conference entitled Laser Safety Practi-cal Applications Seminar (PAS). This event, organized by chairs Eddie Ciprazo, University of California, Berkeley and Robert Sarason, Univ. of California, Davis, featured real-world application of the principals of laser safety to every day situations. The span of topics and the ability to network with the world's top laser safety professionals made this year's conference the best to date. Attending PAS ensured delegates could experience tutorials from experts in the field, providing practical working information to assist individuals wishing to broaden their capability and experience.

For example, these seminars ranged from "Basic Optics for the Laser Safety Officer" taught by instructor Leonard Migliore to Cathy Scogin's "Medical Laser Safety – From the OR to the Day Spa" and "CDRH / IEC – Who it Applies to?" with course instructors Nikolay Stoev and Thomas Lieb. Of particular interest to those who may have missed the conference was "Lessons Learned/Laser Accidents – Good Lessons, Bad Accidents, Ugly Consequences" taught by Eddie Ciprazo and Robert Sarason. This session reminded the participants how such simple and easily overlooked details like danger signs lacking classification and failing to provide laser safety training can have severe consequences.

> "ILSC® 2007 was by far the best International Laser Safety Conference I've ever attended. The range of topics provided valuable information for both novices and experts in the field. My thanks to you, the LIA staff, and those who planned the program for an excellent job."
>
> *Johnny Jones*
> Laser-Professionals Inc.

ILSC's Workshops

Exciting as it was, the PAS was but one aspect of this multifaceted conference. Sharing the spotlight with the PAS were the ILSC® 2007 workshops. These sessions gave the participants practical tools to audit, analyze, and evaluate practices and procedures in the laser workplace. Also included were workshops covering the international perspectives of laser safety such as William Ertle and Roy Henderson's workshop entitled "The Whys and Hows of Laser Safety Training Worldwide." This workshop entailed a general overview of the various laser safety standards in use worldwide. The following quote from the presentation clearly reflects the goal of laser safety training, "Training should aim to promote laser safety as an enabling discipline. Rather than imposing constraints on how people use lasers, it should be seen as enabling laser technology to be beneficially exploited in a safe and effective manner."

Overall, ILSC® 2007 was a resounding success for all involved. It was four days of networking, workshops, PAS, and camaraderie that will benefit all for some time to come. LIA would like to thank all of those individuals, vendors, sponsors, instructors, and organizations that made ILSC® such a successful endeavor. Without your dedication this conference would not have been possible. In the words of Conference Chair John Tyrer, "I wonder how ILSC® 2009 is going to better this one." ✱

Stephen Lumbert is a freelance technical writer for LIA.

Conference Proceedings

The 2007 International Laser Safety Conference Proceedings covers the comprehensive four-day conference on all aspects of laser safety practice and hazard control. All technical sessions and workshops that addressed developments in regulatory, mandatory, and voluntary safety standards for laser products and laser use are included. To order your copy of the ILSC® 2007 Proceedings, visit www.laserinstitute.org, or call 800-34-LASER.

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ILSC 2007

INTERNATIONAL LASER SAFETY CONFERENCE • "THE WORLD'S LEADING CONFERENCE ON LASER SAFETY"

From left, Nikolay Stoev, Myungchul Jo, Bob Sarason, Eddie Ciprazo and Bob Carranza at the Welcome Reception.

Yohanna Jones, Johnny Jones, Darrell Seeley and Prem Batra at the Welcome Reception.

From left, Ken Barat, John O'Hagan, John Tyrer and David Sliney at the Meet & Greet Reception.

Ken Ishikawa, Takeo Masuda and Yukio Sato having fun at the Vendor Reception.

Plenary speakers Alfred Vogel, left, and Rob Broderick.

From left, Mary Gorschboth-Zimmerman, Jerome Dennis, Wes Marshall, Jay Parkinson, Robert Aldrich, and Sheldon Zimmerman.

From left, Jason Magnum, Simon Lappi, William Burgess, Ben Edwards, and Ritchie Buschow enjoyed the Welcome Reception on Monday evening.

Sheila Jeffrey, Penelope Galoff, and Randall Kehres at the Meet & Greet on Sunday.

Tim Hitchcock, Ginger Marshall and Wes Marshall enjoyed the Vendor Reception.

Practical Applications Seminar chairs Eddie Ciprazo, left, and Bob Sarason. Right, the Welcome Reception was packed full of attendees.

2007 Wilkening and Rockwell Awards Presented at ILSC

ILSC® 2007 attendees also had the opportunity to network with laser safety experts from around the world. Two laser safety experts in particular were recognized at the conference for their contributions in the laser safety arena – Ronald C. Petersen and Darrell L. Seeley.

Ron Petersen has been a member of ANSI ASC Z136 for more than 30 years, during which time he served as secretary (1978-1989), vice chairman (1997-2000), and chairman (since 2000). He has authored a number of technical papers and book chapters on various aspects of RF/micro-wave and laser safety. In recognition of his commitment to the improving laser safety, Petersen was presented the 2007 George M. Wilkening Award. LIA presents the Wilkening Award to recognize individuals who have made extensive contributions to laser safety in science, medicine, industry, or education.

Darrell Seeley, owner of Laser Safety Consulting, LLC in Wales, Wisconsin has been involved in laser education and laser safety education for two decades, both in an academic setting and as an instructor of continuing education courses. During ILSC® 2007 he was awarded the R. James Rockwell, Jr. Award for his contributions to the field of laser safety education. The R. James Rockwell Award is presented in recognition and appreciation of extensive contributions to laser safety.

LIA Executive Director Peter Baker presented the 2007 George M. Wilkening Award to Ronald Petersen.

Tim Hitchcock, right, presented the 2007 R. James Rockwell Award to Darrell Seeley at the Welcome Reception.

ALAW 2007 Debuts Fabricators Day

by Kate Bachman

When the Fabricators & Manufacturers Association, Intl. (FMA) and the Laser Institute of America (LIA) announced in April 2006 that they purchased the Automotive Laser Application Workshop (ALAW), FMA President and CEO Gerald Shankel explained FMA's objective for its role in the acquisition.

"This will empower FMA to provide greater access to cutting-edge laser technology to our 1,500 members and 160,000 subscribers."

Peter Baker, executive director of LIA, added, "This will further emphasize our strength and presence in the laser end-user community."

The new direction materialized with an entire day devoted exclusively to presentations specifically focused on fabricators and safety in a Fabricators Day at ALAW 2007, held April 17-19 in Plymouth, Mich.

Fabricator's Day Roundup

For a long time, discussion of lasers revolved around numbers — speed or wattage. That has changed in recent years, as lasers are being manufactured for specific applications and meeting specific goals such as maximizing uptime, depressing consumable costs, ensuring safety, and operating with a smaller skilled workforce, FMAC Executive Editor Dan Davis said in his keynote address.

For the first time, two ALAW presenters were fabricators, offering their unique hands-on perspectives: MG Products Inc. had struggled to produce the 70 parts per shift on the company's vertical machining centers. The tubes the company was machining were often difficult to manipulate because even as they sat in the workholders they might occasionally move, blowing any chance to maintain tight tolerances and requiring the need for more grinding. Seeking alternatives, MG Products President Mark George purchased a laser tube cutter in 2005 and soon was producing the same tube parts at a rate of 85 parts per hour.

Another fabricator, Vivek Gupta of Texas ProFab, shared his experiences with his company's installation in 2006 of a Mitsubishi laser, 12-shelf material tower, and unload cart. The capabilities of the new nesting and laser machine operating software forced Texas ProFab to rethink the way it approached sheet metal fabricating on the laser.

LIA's Peter Baker, left, and FMA's Gerald Shankel continued to build on the strong tradition of ALAW.

The company's part designers had been doing CAD drawings for customers, then manually applied laser paths using the old CAM software. With the new software, nests of dissimilar parts now are created automatically once the CAD drawing is imported into the CAM software. Gupta estimated that what used to take seven hours now takes about two.

Other presentations covered topics such as how plate lasers are increasingly being looked at to replace EDM and milling operations; questions to ask regarding the true cost of owning a laser; how shops should designate a laser safety officer who can follow closely the evolving ANSI and OSHA standards to ensure compliance and to prevent hazards, as well as presentations about custom laser systems, high-speed lasers, and automating laser systems to enhance safety and efficiency.

Trends Driving Laser Technology

The second and third days of the conference focused specifically on laser technology in automotive research and applications and were geared mostly for manufacturing, production, product design, and research/development engineers.

Societal demands driving greater dependence on laser technology are energy and environmental concerns as well as customization, according to Reinhart Poprawe of the Fraunhofer Institut für Lasertechnik. The demand for customization and diversity requires the high-speed capabilities and flexibility of laser processing. Laser surface technologies will play a greater role in the future in forming materials and assemblies, such as laser welded blanks, to improve fuel efficiency. In addition, Poprawe predicted that disc and fiber laser welding will emerge as the dominant forms of welding in automotive applications.

Customer demand for customization may drive some unique, out-of-the-box designs that could create new manufacturing approaches requiring laser technology, said Klaus Löeffler of TRUMPF Laser Technology Center. The aging population may require auto designs that are easier to open and get into, with seats that swivel out, for example. Car designs will change from today's unibody to tubular space frames, achievable with laser welding, or board frames, flattened bodies over which assembled body shells will be positioned, which will require single-sided joining and laser trimming, he predicted.

Some of the more fanciful designs Löeffler proposes include cars with built-in rear-facing, "park bench-like" seats; expandability to accommodate more or fewer passengers; and kiddie cars as a new vehicle market. In addition, he predicts environmental, and safety concerns will expand the need for laser cutting and welding to achieve weight reduction with high-performance materials, fewer components, a larger mix of materials per vehicle, and alternative propelling systems such as

fuel cells and hybrid engines.

Presentations on applications for laser brazing, remote laser welding, and solid-state (disc and fiber) lasers dominated the days' presentations. Examples were offered of laser welding and brazing being implemented increasingly in automaker's plants and by their suppliers.

Automakers' Current Applications

Automakers Volkswagen, Nissan, DaimlerChrysler, and China FAW shared examples of where and how they apply laser welding and brazing in their manufacturing operations.

Volkswagen implemented laser brazing in 1997, Torsten Jackel said. The tri-plane-shaped trunk lid design could not be stamped as one-piece; therefore, two stamped parts had to be joined to create the assembly. VW chose laser brazing to accomplish the task because it minimizes heat distortion, and creates a smooth, barely visible seam. The approach was so successful, the company expanded laser brazing's use to other assemblies, and plans to expand its use to join roof seams, side panel seams, and truck lid seams.

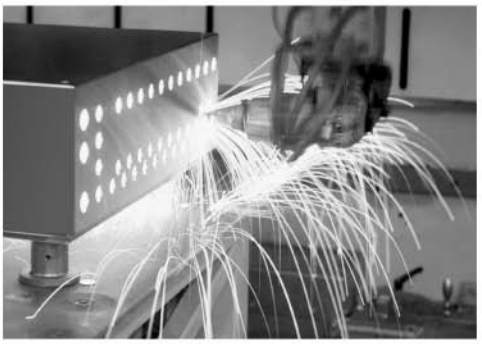
DaimlerChrysler showcased its most recent use of laser brazing and laser welding in the 2007 Mercedes-Benz C-Class W204: It laser brazes three components of the truck lid; "laser-fixes" doors; and remote laser welds doors, inner sidewalls, and rear centers, Berthold Hopf said. Earlier generations of Mercedes-Benz's that have been laser processed include laser welding of the roof to sidewall, and base to the floor, and laser brazing of the sidewall, and laser-hybrid welded aluminum doors, laser-fixed doors and fenders, and laser welded roof rails.

Nissan uses laser welding to manufacture tailor-welded blanks, and to achieve one-sided body welding of roofs, sills, and seat backs, according to Takashi Kashikuma. It also uses remote welding to join hood and truck lids. Continuous laser welding is used to achieve high-torsion stiffness and weight reduction. Remote welding helps the company achieve cost reduction by stage integration and by cutting labor costs. For example, by converting spot welds to remote welded, horseshoe-shaped "ring welds" on its trunk lid, the company reduced the number of welds from 102 to 22.

China FAW, said Dr. Yao Yuan, laser welds water pump gears on its JMC; laser hardens engine cylinders in BJC, laser alloys piston grooves; laser hardens engine crankshafts; and laser welds the roof to the car body of all of the VW models it makes. It also uses lasers to cut and mark.

The joint acquisition of ALAW brings together the laser technology and safety applications expertise of LIA and the metal fabricating industry and educational strengths of FMA to produce an unparalleled educational laser technology conference beneficial to both organizations' members and readers. Fabricators interested in attending next year's ALAW should mark their calendars for May 13-15, 2008. ✱

Kate Bachman is senior associate editor of The Fabricator.



A Lifetime in Optics
Art Guenther, 1931-2007

Arthur H. Guenther, physicist, professor, and worldwide ambassador for optics and photonics, who made a huge impact on that industry, died April 21, 2007 at his home in New Mexico, just one day after his 76th birthday. Dr. Guenther, a fellow and lifetime member of LIA, had been a member for over 30 years, which included a year as president in 1977. As a defense scientist, he was known throughout the world for his work in nuclear simulation, laser technologies, pulsed power, and nuclear technology.

Guenther served in the U.S. Air Force ROTC Program while at Rutgers, and after receiving his PhD from Penn State in chemistry and physics, was assigned to Kirtland Air Force Base in 1957. He then transferred to civil service and spent 15 of his 31 years in the Air Force as chief scientist of the USAF Weapons Lab and also held leadership/policy roles at both Sandia and Los Alamos National Laboratories.

During his career, Guenther was an electrical and computer engineering research professor emeritus at the University of New Mexico's Center for High Technology Materials (CHTM) in Albuquerque, NM, where he is credited with playing the major influential role in the creation of the center. Guenther had also recently been appointed as a senior science advisor emeritus at the Air Force Office of Scientific Research.

Nationally, he was very active with professional societies that served the industry he was so involved in. Besides his involvement with LIA, he served on many boards and committees for the Institute of Electrical and Electronics Engineers (IEEE), SPIE, and the Optical Society of America (OSA). He also participated in numerous research advisory committees for government, universities, and industry, including being the science advisor to three New Mexico governors. On the international level, Guenther served as president of the International Commission for Optics from 1999-2002 and was elected to the Russian Academy of Science for his work in enhancing communications between the Soviet Union and the U.S.

Guenther was the recipient of numerous awards, including the Distinguished Senior Executive Award, which is the highest award for career civil servants, which was presented by President Ronald Reagan. In 1983, he was presented with the Arthur L. Schawlow award by the LIA. This award recognizes those individuals who have distinguished themselves by making outstanding contributions in the applications of lasers for science, industry, or education.

Guenther is survived by his wife, Joan, daughters Tracie and Wendy and their husbands, and two granddaughters. A funeral service to celebrate his life was held in April at Kirtland Air Force Base. Memorial contributions in Art's name can be made to NM MESA (Math, Engineering, Science Achievement) c/o Pamela Caudill, 2808 Central SE, ABQ, NM 87106 or a technical society of your choice. ✱

From His Friends

"I was especially saddened by the news of Art passing. Art and I were very close when we served for years on the LIA Board of Directors and as officers. He always expressed, in the strongest of Guenther language, concern that the LIA offer its members value for their LIA membership. I can recall him saying very often, "What are we offering our members?

"As to fond memories, there are so many, but the one I treasure more than others occurred at an LIA board meeting dinner in Fort Worth, at a Texas steak house, where Art challenged the house and won by eating a 32-ounce steak, especially as he was always on government per diem in those days.

"Art was a great friend, a loyal and vigorous supporter of the LIA, and a man who loved life and his friends. He will be missed." *Dave Belforte*

"Art was truly a unique individual. I first met him back in the mid-60s when he came to Raytheon to purchase our first available 1 kilowatt CO_2 laser for the Air Force. Within minutes we became fast friends, and our friendship and mutual respect has lasted all this time. He was brilliant, creative, enthusiastic, blunt, a team player, and always enjoyable to be with. He was a major contributor to the high power laser field, our industry in general, and a great supporter of the LIA. I add my thoughts of special gratitude for the life of this man who was known and respected by so many." *David Whitehouse*

"I know we will all miss Art very much. We all loved Art. He touched so many. This is a very big loss to the community and to all of us personally." *William "Pete" Latham*

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Annual ANSI Z136 Laser Safety Meeting

by Thomas E. Johnson, Colorado State University,
Health Physics Society, representative to the ANSI Z136 committee

The ANSI Z136 committee met in San Francisco on March 18, 2007. The editorial review process for the primary laser safety standard, Z136.1, *Safe Use of Lasers*, has been completed and the standard is expected to be available in May or June 2007. The new standard is in a new single column format. Significant changes were made to appendix B, Examples 15 and 25, and section B4 was re-worked. Section B9 was added to the standard, which should prove very useful to users. The transmission of optics was clarified as to its use in hazard evaluation, but not in laser classification.

Future Z136.1 editions will have collinear beam examples, and expect the 1.15 to 2.6 micron maximum permissible exposures (MPEs) to change slightly based on information published in the HPS Journal in 2007, 92(1)15-23. Data regarding skin exposures will also be input into the next standard, and changes should be anticipated.

The next version of Z136.1 is planned for release in 2012, but all substantial changes will need to be addressed in the next two years. As discussed previously, the Z136 standards are currently in the process of changing so each is more "vertical" and covers a specific application, rather than "horizontal" to cover a broad range of applications. The process of changing the Z136.1 to a horizontal standard by 2012 was discussed. The process would remove specific information from Z136.1 and shift it to the new standards. There was a lively discussion regarding what should be removed, where information should reside, the impact on existing and upcoming standards, and the timetable. It was decided that the change will be gradual for Z136.1, and the next version will probably have information that is duplicated in other standards, although efforts will be made to minimize duplication with existing standards.

ASC Z136
Safe Use of Lasers
Accredited Standards Committee

Z136.2

Z136.2 is now officially re-titled as *Safe Use of Optical Telecommunications Systems Utilizing Laser Diodes and LED Sources*. The draft is harmonized with IEC 60825 parts 2 and 12, but it is more focused on the user rather than equipment. The standard will not cover visual communications and it is limited to wavelengths between 0.6 microns and 1mm. This standard only covers fixed point systems, and not mobile systems. Other systems are covered under Z136.6.

Z136.3

Consideration is being given to rename Z136.3 *Safe Use of Lasers in Health Care Facilities* to reflect the broad use of lasers in any setting. The suggested new title would be *Safe Use of Lasers in Health Care*, making the standard applicable wherever lasers are used as a medical devise. Previously, there were gaps with application for spas and veterinary clinics. Also under consideration is replacing the word "human" with "patient" to include anyone who might be exposed.

An area of great concern to the committee was reports of injury due to the use of intense light sources. Although these sources are not lasers, and not under the purview of Z136, members of the committee are working with the ACGIH, ICNIRP and IEC 60825-8 and -12 groups to help resolve this problem.

Z136.4

Recommended Practice for Laser Safety Measurements for Hazard Evaluation, Z136.4-2005, is undergoing revisions to match the laser classification system in Z136.1. Changes in measurement and other changes based on the new Z136.1 are currently being incorporated into the draft. More examples are being created for the next version as many people find they are very useful. Examples using the angle of subtense and viewing with optical aids are among the anticipated additions. The next version is planned for release in 2010.

Z136.5

Safe Use of Lasers in Educational Institutions, Z136.5 draft was approved by subcommittee ballot in 2006, and has been harmonized with the IEC classifications. It is in the queue for review by the Editorial Working Group this spring, followed by consensus body ballot. This revision could be available as soon as the end of 2007.

Z136.6

Safe Use of Lasers Outdoors, Z136.6-2005 is planned to be revised and the next version released in 2010. The committee is coordinating with the Z136.10 committee to ensure that there is minimal duplication of effort.

Z136.7

The draft for Z136.7, *Testing and Labeling of Laser Protective Equipment*, has completed editorial review and is slated for consensus body balloting. This is a new standard and should be available in late 2007 or early 2008.

Z136.8

With the establishment of the new standards subcommittees (SSCs), the SSC-8 (research, development and testing) committee chair gave his first report. This proposed

new vertical standard, Z136.8 is anticipated to apply to universities and any laboratory performing research. The intent is to have those people in a research environment use both the Z136.1 and Z136.8 together so only that information pertinent to the specific needs of research is covered. This standard is anticipated to be out in 2012.

Z136.9 and 10

Following this presentation, we heard from the chair of SSC-9 (manufacturing). Seeking to compliment Z136.1 and clarify items specific to the manufacturing environment, the Z136.9 is also expected in 2012.

Finally, development of a proposed Z136.10 (*Safe Use of Lasers in Entertainment, Displays and Exhibitions*), will be coordinated with IEC 60825-3. Plans are to have a draft document by September 2007, so a 2012 deadline might be met.

Interested in participating on one of the ASC Z136 standards or technical subcommittees? Apply online at www.z136.org or contact Barbara Sams at bsams@laserinstitute.org. ✱

Photo courtesy of Bill Ertle.

LIA's Barbara Sams presented David Sliney an appreciation award for years of service as TSC-2 chair during the annual meeting.

MEMBER PROFILE

NoIR Laser Company

LIA Corporate Member NoIR Laser Company, LLC was founded by Brooks Gleichert in South Lyon, Mich. to serve the laser safety eyewear market. The company offers a full range of protective eyewear for coherent and non-coherent light/energy sources and offers customers quickly engineered solutions for new laser applications.

NoIR manufactures internationally-certified laser safety eyewear for medical, military, aviation, aerospace, scientific and industrial applications. As a specialist in custom frequency absorption, NoIR also produces filters for alignment, forensics, UV/Blue light curing, photodynamic therapy, enhancement and telecommunications. Currently NoIR has three trademarked lines – LaserShield, UVShield and I-Shield.

Company Evolution

Established in 1996 as an off-branch of NoIR Medical Technologies (1972), NoIR Laser Company, has maintained a singular focus: to develop a comprehensive line of safety eyewear for coherent and non-coherent light sources by responding to the needs of customers, both large and small. All NoIR LaserShields are manufactured in the company's southeast Michigan facility, with manufacturing processes held to strict tolerances to ensure that all filters exceed performance and absorption specifications.

Still a family-owned business, Marketing Director David Bothner explains the name – NoIR. "The original product lines from the 1970s were UV and IR absorbing sunglasses for the low vision/visually impaired population, so the origins of the name are No IR. Over time, and as the product lines evolved, the name has taken the preferred French pronunciation, although we'll answer to either."

The first products that began the company for laser applications were for the ophthalmic and photodynamic therapy applications.

Company Products

Today NoIR offers over 30 CE-certified LaserShields laser safety goggles that afford the highest levels of protection, visibility and comfort, and are certified for ultrafast pico- and femtosecond pulses and for high-powered pulses. LaserShields have a lifetime frame warranty and are available in a variety of styles, including loupes, clip-ins, and pediatric and orbital eyecups.

"NoIR takes a product driven approach; we strive to provide the highest quality and highest value laser eye protection, converging protection, visibility and comfort, to increase the safety environment of laser system users," said Bothner. "We have an internal R&D department where we design our own new products, new filters and new frame styles."

LaserShields for aesthetic laser applications are the company's biggest sellers.

For the Future

Asked what segment of the industry Bothner has seen the largest growth in in the last five years, he responds, "New laser applications continue to drive the growth in the medical/aesthetic market. While we keep coming out with new frame styles to respond to the comfort and vanity requirements of users, the real excitement is in the five to six new filters we create each year in response to the emerging needs of the industry."

NoIR sees the importance of being an LIA member as a win-win situation. "Membership asserts our responsibility to the safety industry, allows for enhanced networking and increases the exposure of the institute."

For more information about NoIR Laser Co., visit either www.lasereyeprotection.com or www.noirlaser.com. ✱

In The News, cont. from pg. 1

This pattern of blotches changes as the contents of the cancer cells move.

Information about cellular motility is obtained by carefully analyzing the speckles that show up on the sensor. Even though the cells' constituents are of sub-wavelength dimensions, the effect of their motion can be detected by rapidly photographing the interference pattern created by their motion. Of particular interest are the organelles – complex structures inside a cell that perform specialized functions. When organelles move inside a cell, they can facilitate the process of mitosis, where a cell divides itself into two identical daughter cells. Antimitosis drugs, used in cancer therapy, seek to stall this cell division process by blocking this internal movement.

The Purdue technique is designed to determine the degree of activity inside a cell. "As the anti-cancer drug works, there is less motion inside the cell and the shimmer effect is reduced," said Nolte.

The technique could have two potential applications in drug testing. "In one case, we can see how fast an antimitotic drug brings intracellular activity in tumor cells to a stop, and in the other case we can observe the toxic impact that a drug has on healthy tissue (i.e. side effects)," explained Nolte.

One Dot Makes All the Difference

Physicists at the National Institute of Standards and Technology (NIST) and Stanford and Northwestern Universities have built micrometer-sized solid-state lasers in which a single quantum dot can play a dominant role in the device's performance. Correctly tuned, these microlasers switch on at energies in the sub-microwatt range. These highly efficient optical devices could one day produce the ultimate low-power laser for telecommunications, optical computing and optical standards.

In recent experiments, the NIST-Stanford-Northwestern team made "microdisk" lasers by layering indium arsenide on top of gallium arsenide. The mismatch between the different-sized atomic lattices forms indium arsenide islands, about 25 nanometers across, that act as quantum dots. The physicists then etched out disks, 1.8 micrometers across and containing about 130 quantum dots, sitting atop gallium arsenide pillars.

The disks are sized to create a "whispering gallery" effect in which infrared light at about 900 nanometers circulates around the disk's rim. That resonant region contains about 60 quantum dots, and can act as a laser. It can be stimulated by using light at a non-resonant frequency to trigger emission of light. But the quantum dots are not all identical. Variations from one dot to another mean that their emission frequencies are slightly different, and also change slightly with temperature as they expand or contract. At any one time, the researchers report, at most one quantum dot—and quite possibly none—has its characteristic frequency matching that of the optical resonance.

Nevertheless, as they varied a disk's temperature from less than 10K to 50K, the researchers always observed laser emission, although they needed to supply different amounts of energy to turn it on. At all temperatures, they say, some quantum dots have frequencies close enough to the disk's resonance that laser action will happen. But at certain temperatures, the frequency of a single dot coincided exactly with the disk's resonance, and laser emission then needed only the smallest stimulation. It's not quite a single-dot laser, but it's a case where one quantum dot effectively runs the show. ✱

Chapter Corner

LIA encourages all LIA members in the surrounding areas of these chapters to join the chapter and support its efforts to promote the laser industry on a regional level.
For more information or to volunteer to help, visit www.laserinstitute.org/membership/chapters.

Great Lakes Chapter

LIA's Great Lakes Chapter held a meeting on Tuesday, April 10 at the University of Michigan. The chapter and the Ann Arbor Optical Society of America (AAOSA) co-sponsored a panel discussion about the promotion of high-tech industry in Michigan titled Beyond Science: Starting a New Technology Business. Recent cutbacks in the automotive and pharmaceutical industries in Michigan show the need for a diversified local economy and development of new technologies.

A distinguished panel was assembled to discuss starting a new technology business. The panel members had vast experience in starting, funding and mentoring high tech start-ups, and each provided insights into important aspects of starting a new technology business. Afterward, the panelists responded to questions from the audience.

The panelists were: Ned Staebler, Direct Capital Market Development, Michigan Economic Development Corporation; Wesley Huffstutter, new business development specialist, UM Tech Transfer Office; Mohammed Islam, UM professor and CTO, Coherix, and founder of several UM spin-offs; David Weaver, president of Great Lakes Angels (a nonprofit investor organization); Joseph Simms, executive director of Ann Arbor SPARK (a resource for business development), and Anthony Tai, senior vice president and CTO, L-3 Communications EOTech.

The discussion was moderated by Dr. Anthony Tai, who co-founded EOTech in 1995 to commercialize holographic sighting technology, and acquired the company with members of the management team and board of directors in 2002. EOTech was sold to L-3 Communications in 2005.

Dinner for attendees, the officers and panelists preceded the seminar, while refreshments and informal discussions followed. For more information, please visit www.laserinstitute.org/membership/chapters/great_lakes/.

Northeast Chapter

The last meeting of the Northeast Regional Chapter of the LIA was held March 14 in Nashua, NH. This meeting, which was attended by almost 70 members, featured special guest speaker Ronald Mallett, a professor of theoretical physics at the University of Connecticut and a noted lecturer and author on the subject of time travel. He is actively involved in researching circulating, high power laser light and its potential applications to time travel.

One attendee was Laureen Belleville, ILS e-newsletter editor, who said, "Kudos to the chapter organizers for delivering a meeting that was both interesting and thought-provoking and that stimulated a fair amount of energy among attendees. Other regional chapters should take note."

For more information on the Northeast Chapter and its next meeting, visit http://www.laserinstitute.org/membership/chapters/new_england.

Welcome New LIA Members

Corporate Members

- Andon Electronics Corporation, Lincoln, RI
- CLAIM, The University of Michigan, Ann Arbor, MI
- Coherix, Inc., Ann Arbor, MI
- Ionatron Inc., Tucson, AZ
- Macken Instruments Inc., Santa Rosa, CA
- National Centre for Laser Applications, Galway, Ireland
- POM Group, Inc., Auburn Hills, MI
- RMI Laser, LLC, Lafayette, CO
- Telesis Technologies, Circleville, OH
- Yamamoto Kogaku Co., Ltd., Higashiosaka, Japan

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

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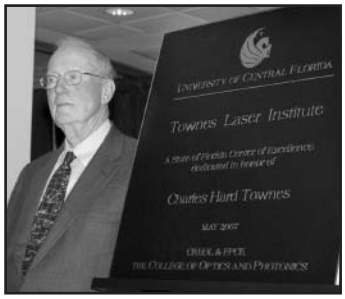
Francois Beauregard, Quebec, QC, Canada
Jukka Siltanen, Hämeenlinna, Finland
Cillian O'Briain Fallon, Dublin, Ireland
Zygmunt Szymanski, Warsaw, Poland
Mei Kuo, Kaohsiung, Taiwan

Members In Motion

UCF Dedicates Townes Laser Institute

The University of Central Florida (UCF) in Orlando, Fla., dedicated its new Center of Excellence in Advanced Laser Technology on May 4, 2007, in honor of Charles Townes, the laser's founding father and a 40-year professor at the University of California at Berkeley. Before the formal dedication of the Townes Laser Institute, Townes gave a lecture on the past, present, and possible future of lasers. A winner of the 1964 Nobel Prize in physics, Townes also toured laboratories at UCF's Center for Research and Education in Optics and Lasers (CREOL) building, which is a long-standing LIA corporate member.



Charles Townes beside the plaque commemorating the dedication of the Townes Laser Institute.

The state provided $4.5 million to help fund the institute, which will focus on the next generation of laser technologies for medicine, advanced manufacturing tools, and defense. In addition, UCF will hire six new faculty members and will contribute more than $3 million for equipment and start-up costs.

The College of Optics and Photonics, with about 150 doctoral students, already houses two research centers, CREOL, and the Florida Photonics Center of Excellence. UCF's optics program, which is celebrating its 20th anniversary this year, was the first in the nation to become its own college within a university when it was designated as such in 2004. The dean is Eric Van Stryland, who along with Professor Martin Richardson, led the effort to establish the new institute.

"The College of Optics and Photonics is recognized the world over because of our faculty accomplishments," said M.J. Soileau, UCF's vice president for research. "We would not be here today without Professor Townes' pioneering work."

Charles Townes, 91, won the Nobel Prize for the invention of the maser and laser. Townes was the keynote speaker at LIA's 2000 ICALEO® conference.

"It was great meeting the person who started it all," said Tim McComb, a UCF doctoral student. "It was kind of the same thing as someone meeting Thomas Edison in the 1900s. He started the electronic age, Dr. Townes started the photonics age." ✱

LIA Announces

LIA Expands Global Presence

LIA expanded its activities in China by attending the "LASER. World of Photonics China," which was held March 21-23, 2007. This leading trade show for laser technologies and material processing in the high-growth Chinese market set an attendance record welcoming more than 9,000 attendees.

The LIA, fulfilling its mission to foster laser applications and safety worldwide, was one of the cooperating societies for the 2nd International Conference on Laser Processes and Components (LPC). LPC was held in conjunction with "LASER. World of Photonics China" and included additional organizers Messe München International, Laser Zentrum Hannover eV, and the Laser Processing Committee of China Optical Society (LPC-COS). The chairs of LPC consisted of LIA's president-elect Andreas Ostendorf of LZH and LIA board member Minlin Zhong of Tsinghua University. With over 230 registrations, this two-day event included presentations on laser processing technologies, laser components, current developments and trends in laser technology and laser safety aspects. LIA was able to connect with new end-users, seek potential new corporate members, and gain global support for its Pacific International Conference on Applications of Lasers & Optics (PICALO), which will be held in Beijing, China April 2008.

Look for LIA to provide opportunities for its members to explore more international marketing possibilities in the photonics sector, especially the laser processing market in China. For more information, contact Jim Naugle at 407-380-1553 or jnaugle@laserinstitute.org.

Mark Your Calendars

The 26th International Congress on Applications of Lasers & Electro-Optics (ICALEO®), will be held Oct. 29-Nov. 1, 2007 in Orlando, Fla. ICALEO® 2007 will include two conferences, the Laser Materials Processing Conference and the Laser Microprocessing Conference, as well as a Poster Presentation Gallery, the Laser Solutions Short Courses, and a Business Development Session. Furthermore, an exciting new conference has been added for 2007 devoted strictly to nanomanufacturing. For more information, visit www.icaleo.org or contact Beth Cohen at 800.34.LASER or e-mail bcohen@laserinstitute.org.

Revised Eyewear Guide Coming!

The newly revised 6th edition of the *LIA Guide for the Selection of Laser Eye Protection* is soon to be released (as of press time the book was at the printers). This edition has new information on eyewear protection for ultrafast lasers, including a schedule/table of available eyewear vendors. It also has an expanded version of multi-wavelengths eyewear availability. Cost for LIA members is $20 and $25 for nonmembers. To order your copy, visit www.laserinstitute.org/store or call 800.34.LASER. ✱

Journal of Laser Applications® Update

The *Journal of Laser Applications®* offers the latest refereed papers by leading researchers in the laser community. The May 2007 issue includes papers from materials processing, biomedical, and safety. Look for the online version at www.laserinstitute.org/publications/jla/. To view the journal online, please make sure your membership is current. Starting with the February 2007 issue, online figures will be in color. In addition, articles will now be posted online as the production cycle is completed ensuring timely publication. These articles will be fully citable.

The JLA is published four times a year by the Laser Institute of America in February, May, August and November. It is sent to all LIA members as a member benefit. For nonmembers of LIA, call the American Institute of Physics at 1.800.344.6902 for subscription information.

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