LIA TODAY

LIA and FMA Purchase ALAW pg. 5

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

Volume 14, Number 3 **May/June 2006**

In The News...

New Nanotechnology Center Announced

U.S. Secretary of Commerce Carlos M. Gutierrez announced in March the launch of a state-of-the-art center for collaborative nanotechnology research at Commerce's National Institute of Standards and Technology (NIST). Scientists from U.S. companies, universities and government will focus on overcoming major technical obstacles to cost-effective manufacturing of products made with components the size of atoms and molecules.

CNST also houses a Nanofabrication Facility, or Nanofab. This large "clean room" is equipped with a still-growing array of state-of-the-art tools for making, testing and characterizing prototype nanoscale devices and materials. These instruments will be available to collaborators and to outside users.

Fiber Lasers Market to Grow

Fiber laser sales will grow by over 35% per year from

(Cont. on pg.14, see **In The News...**)

As Lasers Become Mainstream, Safety Even More Important

by Jack Dyer, Contributing Editor

Recognizing the rapid movement of the laser out of previously sheltered environments in labs and industry, the Laser Institute of America (LIA) encourages members to join or form broad regional groups putting membership to work to build better, safer laser application communities.

Jim Naugle, LIA marketing manager, reports, "As part of LIA's commitment to promote laser applications and safety worldwide, three chapters have recently been formed – Great Lakes, Western and Northeast regions. Each chapter serves the unique needs of its members." *(For more information on how to join and volunteer to help with LIA's chapters, see Chapter Corner on page 13.)*

Why Are We Here? Because They're All Around Us

Opening the first formal meeting of LIA's Great Lakes Chapter in Plymouth Township, Michigan this April Co-chairs Mike Klos of Laser Mechanisms and Susan Sprentall of Precitec, Inc. set the scene for a thoughtful review of the role of the laser in our everyday lives.

Almost everyone on the planet has seen a laser or comes in contact with them routinely. Over the last 10 years, lasers have become so familiar that almost everyone uses an "s" rather than a "z" when spelling the word laser. Most eight-year-olds can tell you that lasers are based on light and that they're pretty common

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

Annual Meeting Focuses on Laser Safety Updates

by Thomas E. Johnson, Ph.D.

The ANSI Z136 committee met in Rockville Maryland on March 16, 2006. There are several members of the Health Physics Society who are members of this committee, and at least three are certified health physicists (CHPs). A major interest of most health physicists is the issuing of new and revised laser safety standards.

Proposed Z136.1 Standard Changes

The primary laser safety standard, *Z136.1 Safe Use of Lasers*, is currently in the editorial review process. Its expected published date is late 2006. The new standard and future standards should be in a new single column format that is easier to read and an index is planned for all new standards as well.

There were discussions in the technical subcommittee of changes for the 1.2 to 2.6 micron wavelength MPE (maximum permissible exposure) limits within Z136.1. Currently, the MPE limits follow a "step function" and the revision would have the effect of slightly raising the exposure limits in most of this wavelength regime. Additionally, example calculations will be added in the future to Appendix B of this standard, with the goal of having an example for every part of the standard.

A proposal was made to completely revise

(Cont. on pg. 8 see **ANSI**)

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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.

The editors of *LIA TODAY* welcome input from their 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.

If you are interested in affordable advertising space in this newsletter or a subscription, please contact Jim Naugle at 407.380.1553 or 1.800.34.LASER.

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 www.laserinstitute.org

Laser Safety Officer Training
July 17-19 • Milton (Toronto) ON, Canada
Aug. 7-9 • Denver, CO
Dec. 4-6 • Orlando, FL

Laser Safety Officer with Hazard Analysis
June 5-9 • Boston, MA
Sept. 18-22 • San Francisco, CA
Oct. 30-Nov. 3 • Scottsdale, AZ

Medical Laser Safety Officer Training
Sept. 22-23 • Boston, MA
Nov. 10-11 • Las Vegas, NV

Laser Safety in the Lab
Aug. 14-15 • Orlando, FL

Medical Aesthetic Lasers & Light Technologies
Aug. 19-20 • Denver, CO
Sept. 16-17 • Boston, MA
Oct. 14-15 • Chicago, IL
Nov. 18-19 • Houston, TX

ICALEO® 2006
Oct. 30-Nov. 2 • Scottsdale, AZ

ILSC® 2007
Mar. 19-22 • San Francisco, CA

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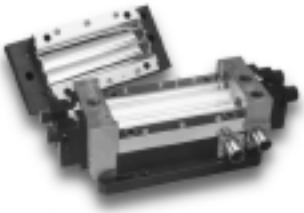

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Executive Director's Message

LIA Is Conferences

LIA Executive Director Peter Baker

I just returned from beautiful Melbourne, Australia, site of PICALO 2006, the second successful conference in the series. Afterwards I explored the scenic beauty of New Zealand with my son Scott, then enjoyed a few days in Sydney before the long flight home. If you ever get the chance to go there, I recommend it.

Next in the series is PICALO 2008, which will be in Beijing. The event will be in April, just a few short months before the 2008 Olympic Games so the city will be in tip-top shape. Mark your calendars!

Back in the U.S. we are busy working on the 25th ICALEO® to be held Oct.30-Nov. 2 in Scottsdale and then ILSC® 2007, which will be in San Francisco. We are adding two days of very practical sessions at ILSC® to meet the needs of laser safety officers, who represent the "end-users" for safety information.

On April 27th LIA took a giant step to meet the needs of industrial end-users when, together with the Fabricators and Manufacturers Association (FMA), we purchased the Automotive Laser Applications Workshop (ALAW) from founder Frank DiPietro. This conference will emphasize LIA's presence as a provider of products and services to the laser application end-user community and to the corporations who produce the lasers and systems that they use (see article below).

LIA is conferences.

Peter Baker

pbaker@laserinstitute.org

LIA and FMA Purchase ALAW

The Laser Institute of America (LIA), Orlando, Fla., and the Fabricators & Manufacturers Association, Intl. (FMA), Rockford, Ill., have purchased the Automotive Laser Application Workshop (ALAW) from founder Frank DiPietro.

The joint acquisition of ALAW represents an opportunity to bring together the laser technology and safety standards expertise of LIA and the metal fabricating industry and educational strengths of FMA to produce an unparallel educational laser technology conference beneficial to both organizations' members and readers.

"This will empower the Fabricators & Manufacturers Association to provide greater access to cutting-edge laser technology to our 1,500 members and 160,000 subscribers," said FMA President and CEO Gerald Shankel.

"We at the Laser Institute of America look forward to working with FMA to continue to build on the strong tradition of ALAW. This will further emphasize our strength and presence in the laser end-user community," said Peter Baker, executive director of LIA.

Laser industry icon Frank DiPietro will share the 2007 conference then continue to provide inspiration and leadership for the conference as a consultant for five more years.

Next year's ALAW is scheduled to be held in April 2007 in this year's location of Plymouth, Mich., event organizers said. This year's conference included three days of presentations by industry leaders on fiber lasers, Nd:YAG laser welding, remote beam laser welding, combined laser cutting and welding, and laser surface technology in automotive applications.

About the Buyers

LIA is the international society for laser applications and safety. Its mission is to foster lasers, laser applications and laser safety worldwide. Serving the industrial, medical, research and government communities, LIA offers technical information and networking opportunities to laser users from around the globe.

The FMA provides the tools and resources fabricating and forming industry companies need to improve operations through education and training. Its publishing arm, FMA Communications, publishes four industry trade magazines that cover laser technology—The FABRICATOR®, The Tube & Pipe Journal®, Practical Welding Today®, and STAMPING JOURNAL®. The FMA co-sponsors the FABTECH International® & AWS Welding Show, North America's largest metal forming, fabricating, tube and pipe, and welding tradeshow.

FMA's Gerald Shankel, left, and LIA's Peter Baker announced the purchase of ALAW from founder Frank DiPietro, right.

Lasers, cont. from pg. 1

and ordinary.

Speaker Steve Farmer of Eli Lilly, Indianapolis, addressed concerns about laser processing safety in corporations and educational organizations. Farmer, a radiation safety officer, reminded the 40+ chapter members and guests of the constant attention required to dangers from reflections and inattention, especially to eyesight.

Attendees at the first meeting of the Great Lakes Chapter included speakers Steve Farner and Mike Klos on left.

A Certified Laser Safety Officer and health physicist, Farmer recalled through case histories the human costs of inattention on the job or in the laboratory. He decried the lack of a central registry of laser accidents and incidents of all kinds. Audience members discussed record-keeping locations, noting they tended to lack complete details. One reason, they said, is that except for major laboratories and industrial complexes, records are usually kept internally and/or reported confidentially to the Occupational Safety and Health Administration (OSHA).

Mike Klos described his experiences in watching the movement of lasers from the factory and research lab. He did his first experiment with a laser over 27 years ago. Since then, he says, "I have seen lasers grow from what was called 'a tool without an application' to being a necessity in much of our daily lives.

"To this day I still get excited when I see a beam of light cut through a sheet of steel. I still marvel at the ability to create and control a laser pulse within a few femtoseconds. I've been known to get emotional when finding out about a new laser procedure that might save a child's life or improve the human condition.

"I eagerly await breakthroughs in all areas of the laser world. Like you, lasers are a big part of my life. We are all here tonight because we are in one of the most technology driven industries in history," Farmer said.

Even if we are in the forefront of innovation, he says, we must constantly strive to advance our knowledge. One way is to meet and share information with others who have the same passion for lasers and what they can do. That's also why we're here as a regional chapter.

Role of American National Standards for Laser Safety

LIA training taught Klos to be alert to ANSI Z136.1 requirements for a Class 4 laser while the beam cut the steel. He knows to wear proper eyewear, be aware of the high-voltage power supply and laser-generated airborne contaminants. So what does he need to watch out for when he goes home or to the local grocery?

Lasers are classified according to their degree of hazard from Class 1 to Class 4 – the most hazardous – as Klos would find on the job. Dangers of a Class 1, 2, or 3a laser are much less significant than those of a Class 3b or 4 laser. Even for these low-power class lasers, however, direct exposure of the eye to the output beam can be dangerous. (Non-beam hazards are addressed in depth in Section 7, ANSI Z136.1 available through LIA's website, www.laserinstitute.org.)

Curiosity and lack of knowledge, for example, can lead to increased risks of misuse of Class 2 and Class 3a lasers. Specific examples are the misuse of laser pointers and hand-held barcode scanners.

Today's laser pointer is no longer a toy or a curiosity that high school boys use to startle cheerleaders or opposing team players. And who hasn't seen a movie's sniper searching for his victim with an infrared scope? The eye's blink reflex (0.25 seconds) is usually enough to protect the eye from damage due to visible lasers.

Unfortunately, there are reports of imported laser pointers bypassing FDA requirements, these are significantly more dangerous and contain a green beam rather than a red one. These mostly Chinese imports do not contain an FDA warning label. Before buying a pointer, one should check to see that it contains an FDA warning. (Another standard, Z136.6, addresses Safe Use of Lasers Outdoors, including airborne hazards.)

LIA/OSHA Alliance

LIA just recently announced such an opportunity to share information and technology through an alliance with Washington D.C.-based Occupational Safety and Health Administration (OSHA). The alliance focuses on providing access to training resources to help protect worker safety and health particularly by reducing and preventing exposure to laser beam and non-beam hazards in industrial and medical workplaces.

The alliance calls for OSHA and LIA to work together to develop training and education programs for OSHA staff and employers and employees that use lasers in the workplace. In addition, LIA will provide laser-related training courses and focus on sharing information on the bioeffects that lasers have on the eyes and skin, laser control measures and laser safety program administration.

LIA is keeping the charge to focus the excitement of laser technology – safely – as it moves from the workshop and research laboratory into less secure environments. Lasers are truly all around us!

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ANSI , cont. from pg. 1

and simplify the Z136.1 standard, and move all the "specialty" information into three new standards. The three new standards would be Safe Use of Lasers in the Manufacturing Environment, Safe Use of Lasers in Research, Development and Testing, and lastly, Safe Use of Lasers in Entertainment, Displays and Exhibitions (for indoor use applications, may be harmonized with IEC 60825 part 3).

These changes would require making alterations to all the standards. There was great discussion on this issue, especially the implementation of it. Most agreed that simplifying Z136.1 is a good idea in principal. If you are interested in participating in this process, please contact the ANSI committee through the Z136.org website.

Proposed Z136.2 & .3 Changes

Z136.2 will undergo a title change with its next publication, hopefully in early 2007. The new title is tentatively given as "Safe Use of Optical Telecommunications Systems Using Laser Diodes and LED Sources." One of the key goals of the revised standard is to incorporate fiber optics and free space communication devices. Another goal is to harmonize it with IEC 60825 part 2, but with additional guidance. Wavelengths between 0.6 microns and 1 mm are addressed in this standard, and it references both Z136.1 and Z136.6.

The *Safe Use of Lasers in Health Care Facilities, Z136.3-2005*, has just been issued. The committee is now exploring harmonizing with IEC standards, but no firm decision has been made yet. Growing use of lasers in veterinary medicine prompted discussion as to how and where to include those requirements in the standards.

Proposed Z136.4 & .5 Changes

Recommended *Practice for Laser Safety Measurements for Hazard Evaluation, Z136.4-2005*, is an excellent document that does a great job describing how to perform almost all aspects of laser safety. This document describes some ways to comply with the standards and how to perform many tasks associated with the standards. It is essential to anyone who is setting up a laser safety program. The committee is working on improvements and incorporating the Z136.1 revisions into the next version. There are numerous examples, and more will be added in the next revision due out sometime in the next four years.

The *Safe Use of Lasers in Educational Institutions, Z136.5,* is undergoing changes to comply with Z136.1. It covers kindergarten to colleges, and future revisions will include more recommendations and digital photos of setups. There are no major revisions planned, only improvements. Since Z136.5 depends on Z136.1, it is expected to be published in 2007 or early 2008.

Robert Thomas is the incoming ASC Z136 secretary and Z136.org webmaster.

ASC Z136 Update

Many thanks to Jerry Dennis and the FDA Center for Devices and Radiological Health (CDRH) for hosting the annual meeting of ASC Z136 (March 16, 2006). This well-attended meeting, 31 members and 11 observers, included updated summaries from each subcommittee chair, an overview of the upcoming International Laser Safety Conference (ILSC®), and a review of functionality of Z136.org. The highlight of the meeting was a presentation by Dr. David Sliney proposing new vertical standards in manufacturing, R&D, and entertainment.

Committee Chair Ron Petersen was reappointed for a fifth term. Sheldon Zimmerman was appointed to serve as committee vice chair, and Robert Thomas was appointed by the secretariat to serve as committee secretary. Appreciation plaques were awarded to outgoing Vice Chair Jerry Dennis and Secretary Sheldon Zimmerman.

We would like to welcome new members Ben Edwards (Duke University), Penelope Galoff (USACHPPM), Tom Lieb (L*A*I International) and Larry McLouth (Lawrence Berkeley National Lab) to ASC Z136.

If you are interested in participating on ASC Z136 or any of its subcommittees, please contact Barbara Sams at the LIA, 407-380-1553 or bsams@laserinstitute.org for more information.

Peter Baker, right, presents appreciation plaque to outgoing ASC Z136 Secretary Sheldon Zimmerman.

ASC Z136 Chair Ron Petersen, left, presents appreciation plaque to outgoing ASC Z136 Vice Chair Jerry Dennis.

Future Revisions & Standards

Many revisions are incorporated into the just released *Safe Use of Lasers Outdoors, Z136.6-2005* standard. The appendix on IEC harmonization has been incorporated into the standard. In the future, references to free space optical communications will be deleted, as Z136.2 will soon cover this area. Updated forms, aircraft detection systems and terminology have been added to the standard. Revisions for the 2010 edition will possibly have a section describing major changes, and may have a philosophy change. Instead of using MPE as a limit, they are considering using photopic response as a limit.

A vote was held on the Eyewear and Protective Barriers, Z136.7 draft standard in 2005, and it was sent to the editorial review board in December of 2005. It may be published as soon as late 2006, immediately following the Z136.1 publication. This is an all-new standard.

Laser safety standards are, by necessity, rapidly changing. Advances in laser technology and biological effects research impact this field on an almost daily basis. ANSI standards are, by design, revised at approximately five-year intervals.

If you have not updated your laser safety information over the past 10 years, you may find the Z136 series almost unrecognizable now. The changing scope of the standards and issuing of new standards over the past 10 years has significantly expanded the safety information available for laser safety professionals.

If you are currently working with lasers, or may in the future, I would strongly recommend that you obtain the latest standards that apply to your facility and consider becoming a Certified Laser Safety Officer (CLSO).

Dr. Thomas E. Johnson of Colorado State University is the Health Physics Society representative to the ANSI Z136 committee. This article has been reprinted with permission from the author as published in the May 2006 issue of Health Physics News.

Journal of Laser Applications® Update

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Highlights From LIA's 2nd PICALO

LIA's second PICALO (Pacific International Conference on Applications of Lasers and Optics) was held Apr. 3-5, 2006 in Melbourne, Australia, the same location as the first conference. Similar to the first PICALO, the response from the delegates and vendors was very positive and the conference was declared another success. To quote Mo Naeem from GSI Group, "PICALO is like a big family but without the fights."

Conference Chair Milan Brandt.

PICALO proved an excellent source of information and networking opportunities. The Conference General Chair Milan Brandt of the Industrial Research Institute Swinburne (IRIS), Swinburne University of Technology, Melbourne, Australia attracted many international, regional and local researchers, industry users and suppliers to present, hear and share the latest developments in macro- and micro-machining with lasers in the Pacific region.

Andree Haermeyer, Victorian Minister for Manufacturing and Export and Minister for Financial Services, opened the conference. Mr. Haermeyer congratulated Peter Baker and LIA and IRIS for organizing the event.

"With optical technologies emerging as one of the key manufacturing technologies of the 21st century this conference is a significant event that will help to further enhance our vitally important local manufacturing industry, particularly in the advanced sectors that Victoria is focusing on, such as aerospace, defense, automotive, and laser micromachining," he said.

Well-Rounded Conference

The conference was a three-day event covering all aspects of laser technology and application. It attracted some 100 technical papers and delegates from 14 countries including UK, Germany, China, Japan, Korea, Singapore, Taiwan, Sweden, Pakistan, USA and Australia. In addition, two workshops were presented by Bill Lawson on commercialization of R&D and Larry Green on laser beam profile measurement.

In his welcoming remarks Brandt said, "The second PICALO builds on the success of the first in providing a regional forum for researchers in the area of macro- and micro-processing with lasers to present their ideas and discuss their results."

He wished Beijing, the host of PICALO 2008, well and encouraged them to continue with the technical content, atmosphere and style set at the first two conferences.

Plenary Speakers

The conference opened with an excellent review by Reinhart Poprawe from Fraunhofer ILT, Aachen on the developments and milestones in the growth of solid-state lasers. He derived a laser roadmap that couples the specific properties of several lasers with the corresponding application parameters, material properties, product groups and markets. He concluded that the industry faces an intense trend for diversification of lasers and that there may be dominant large markets and niches but there will not be a "best" laser or laser concept in the general sense. He was followed by Eckhard Beyer of Fraunhofer IWS, Dresden who gave an excellent presentation on high power fiber lasers and their application. Fiber lasers are now the hot topic and their use for both macro and micro applications in the world will only expand in the future.

Rapid prototyping and manufacture are now a part of the manufacturing chain and any developments in this area can have a significant impact on a company's costs and profitability. Laser additive manufacturing or direct metal deposition is an enabling technology with potential for fabrication and repair of three-dimensional components directly from CAD. Jim Sears of

Eckhard Beyer gave a presentation on high power fiber lasers and their application.

Several attendees stayed to enjoy the post conference tour which included a stop at a local winery.

Special thanks to the conference sponsors:

- Victorian Government, Dept. of Innovation, Industry & Regional Development
- Victorian Centre for Materials Manufacturing
- Raymax Applications
- Laserline GmbH
- Optec

Additive Manufacturing Laboratory, South Dakota School of Mines and Technology presented recent developments in this technology. He discussed applications that cover six orders of magnitude from microns to meters.

He was followed by Andreas Ostendorf from LZH with a talk on lithography by maskless laser direct writing. Ostendorf discussed some of the drawbacks of conventional lithography and presented advantages in using direct laser writing of resists and laser photopolymerisation for small batches. The final presentation was by James Choon from the Centre for Microphotonics, Swinburne University of Technology, Australia, with a talk on laser induced shape change on metallic nanoparticles and its impact on optical data storage.

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Conference Proceedings

A key issue addressed by the chair was the quality and usefulness of the papers. Similar to the last PICALO, a pro-forma circulated to the authors that assisted them in the preparation of their papers. A peer review of all the papers by a technical panel ensured that the quality and the content of the papers were high. The conference proceedings, containing all submitted papers including the plenary session, are available on a CD and can be ordered online at www.laserinstitute.org.

LIA looks forward to bringing you the next PICALO conference in 2008 in Beijing, China.

Thanks To All

LIA would like to thank Conference General Chair Milan Brandt of the Industrial Research Institute Swinburne, Swinburne University of Technology, Melbourne, Australia, and the program committees and session chairs who made the second PICALO another great success.

Conference Chairs Milan Brandt, left, and Erol Harvey, right, with LIA's Peter Baker and Beth Cohen.

PICALO offered attendees plenty of networking opportunites.

Welcome New LIA Members

Corporate Members

- Albany International Research Co., Mansfield, MA
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Napachat Tareelap, Birmingham, U.K.

Chapter Corner

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

Northeast Chapter

by Ronald D. Schaeffer, CEO, Photomachining Inc.

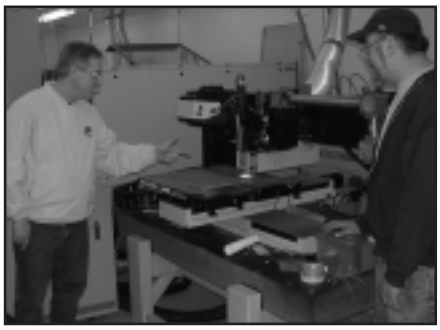
The second official meeting of the Northeast Regional Chapter of LIA was held in Nashua, NH on Mar. 15, 2006. This meeting featured a plant tour of PhotoMachining, Inc. in Pelham, NH and then a dinner and invited talk at the Nashua Sheraton. In addition to visitors from every New England state, attendees arrived from New York, Minnesota, Pennsylvania, New Jersey and Maryland!

Approximately 60 people attended the plant tour, which featured five stations. Three stations were moderated by PhotoMachining personnel and included demonstrations of laser materials processing using excimer and CO_2 at 355nm lasers. The other two stations were moderated by outside vendors, one discussing laser safety by folks from Trinity Technologies, and one discussing motion control by people from Aerotech.

After the plant tour, everyone drove to the next venue for a social hour and dinner. A total of almost 80 people were in attendance including several LIA fellows, officers, board members and past presidents.

The invited speaker was Dr. Paul Jacobs, vice president of R&D at Laser Fare in Rhode Island. His talk on laser trepanning of small holes presented work funded by the SBIR program and their Phase I and II findings together with discussions of future work. Dr. Jacobs' talk gave great insight into how to find the correct parameters for laser drilling materials in a fast, cost-effective and extremely reproducible manner. One of the key points was that you don't always need a 'bigger hammer', but frequently by using better machining techniques you can achieve much better results with a given laser. After considerable work, some blind alleys, a few insights, and considerable help from sub-contractors, standard deviations in hole entrance and exit diameters under two micrometers were achieved; a level of precision and repeatability never previously achieved at Laser Fare.

The Northeast Chapter meetings continue to be a huge success and a great venue for people to interact. The next meeting is being organized by Dr. Bo Gu of GSI Group and will be held in mid-June. Details will be announced closer to the venue date.



Photomachining's Applications Scientist Dr. Oleg Derkach demonstrated a laser at 355nm processing with galvos.

Photomachining's Job Shop Manager Gabor Kardos demonstrated PCB drilling using a CO2-TEA laser in Class 10,000 cleanroom.

Great Lakes Chapter

by Jack Dyer, Contributing Editor

The first formal meeting of the Great Lakes Chapter was hosted by TRUMPF, Inc. Laser Technology Center on Apr. 11, 2006 in Plymouth Township, Mich. In addressing concerns about laser processing safety in corporations and educational organizations, Steve Farmer of Eli Lilly, Indianapolis, reminded the 40+ chapter members and guests of the constant attention required to dangers from reflections and inattention, especially to eyesight. While illustrating actual case histories from university records, he decried the lack of a central registry of laser accidents. Audience members discussed record-keeping locations, noting they tended to lack complete details.

The next meeting of the Great Lakes Chapter will be held July 12 at Fraunhofer Institute in Plymouth, Mich. The Great Lakes Chapter includes the states of Michigan, Illinois, Indiana, Ohio, and the province of Ontario, Canada.

Western Chapter

The formation of an LIA Western Chapter is underway with the first meeting scheduled for Wednesday, May 31, 2006 at the Decathlon Club in Sunnyvale, Calif. A social hour will take place starting at 5:30 p.m. followed by an LIA presentation and then featured speaker Heinrich Endert of Spectra Physics will give a talk on emerging applications of lasers in the semiconductor industry. The vote whether to establish the Western Chapter will be held at the end of the evening

The LIA encourages all LIA members in the supporting area to join the chapter. Members are needed to help plan and conduct the meetings and professional programs. If you would like to volunteer, e-mail jnaugle@laserinstitute.org. You must be an LIA member in order to join the Western Chapter. For membership information, please e-mail membership@laserinstitute.org or join online at www.laserinstitute.org/membership

Members In Motion

Laser Champion Award

On March 30, the TRUMPF Laser Technology Center recognized Frank DiPietro with a Laser Champion Award for his lifetime achievements in advancing the use of laser technology in industrial manufacturing. For more than 45 years DiPietro was actively involved in automated systems, tooling, robotics, and laser systems for the General Motors Corporation's automotive operations. In 1992, he founded the Automotive Laser Application Workshop (ALAW) with the support of the University of Michigan. ALAW is now in its 14th consecutive year, and DiPietro continues as its consultant. TRUMPF hosted the award presentation during an open house on March 30 in conjunction with ALAW.

Expanded Online Offering

Melles Griot, Carlsbad, Calif., has announced that the complete line of lasers found in *Catalog X* is now available for purchase at www.mellesgriot.com. The buy-online site includes helium neon, air-cooled ion, and DPSS lasers, as well as semiconductor diode laser assemblies, drivers, controllers, and mounts. An advanced search function quickly locates specific lasers by wavelength (or color), output power, and type. Additionally, its complete line of opto-mechanical hardware and positioners is also now available for purchase online, which includes more than 850 individual items.

Coherent Opens in Korea

Coherent Inc., Santa Clara, Calif., announced in April that it has established a direct operation in Seoul, Korea. Coherent Korea will offer dedicated support and customer-focused services to Korean customers in this rapidly growing laser market.

Wooyang Trading Company, which has served as Coherent's distributor in Korea, will continue to be responsible for sales to universities and research institutions. However, Coherent Korea now will provide industrial sales and all service to Coherent's customers.

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$140 million in 2005 to $680 million in 2010 in an industrial laser market that will grow just 9% per year to $2.8 billion over the same period. This is the conclusions of a new report from Strategies Unlimited (SU), the optoelectronics market research firm, reported the Apr. 19 issue of *Optics.org*.

Fiber lasers are not competing in applications that employ diode lasers, such as thermal printing. The fiber laser is primarily a substitute for the diode-pumped solid-state laser, but in time it is expected to make further in-roads in other sectors. These will include applications from a few Watts to much higher powers such as the 36kW (fiber) laser, says the report.

The promising outlook is tempered by several looming uncertainties, however. Improvements in the price and performance of direct diode systems could help suppliers of those systems capture market share from fiber lasers, although in some cases the laser suppliers may be the same. The Fiber Laser Market Review and Forecast 2006 is available from SU at www.strategies-u.com.

LIA Announces

Online Laser Safety Training for Physicians

Any physician using a laser in a medical or surgical environment should take advantage of LIA's Laser Safety Training for Physicians Online Course. This course is designed to give physicians using lasers in a surgical environment the basics of laser safety. It covers why a laser can be dangerous, laser regulations and safety standards, basic laser terminology, nominal hazard zone and laser treatment controlled areas, patient safety and laser eyewear, and why you should have your laser serviced and who should do it.

All course materials are electronic and downloadable once the course is purchased. A username and password will remain in effect for three days. Access to the course is unlimited during that time period. The three days start once you first log in. A complete set of color course notes in portable document format (pdf) as well as sample documentation forms including laser log, standard operating procedures, safety audit, and policies and skills is included. This course can be taken from either a PC or MAC. Cost for LIA members is $99 or $149 for nonmembers. Visit www.laserinstitute.org to register.

New Laser Safety Book

LIA is pleased to now offer *Laser Safety Management,* a book that provides practical tools for successfully implementing a laser safety program in any environment. The book, written by Ken Barat of the Lawrence Livermore National Laboratory in California, defines the three elements of laser safety: users, the laser safety officer, and incidental personnel. It covers the types of laser injuries, standard operating procedures to ensure safety, tips and tools to avoid pitfalls, training, control measures, and personal protection equipment.

Laser Safety Management includes sample forms and checklists for a program management system and considers accidents from occurrence through investigation. It also contains a 16-page color insert with 30 illustrations, a chapter on laser safety calculations, a list of Web resources, and covers U.S. and European regulations and standards. Filled with common sense solutions for laser safety issues, the book makes setting up a safety program practically painless.

Cost is $120 for LIA members and $140 for nonmembers. To order visit the bookstore at www.laserinstitute.org.

Industrial Laser Safety Course

Lasers are used in a wide variety of industrial manufacturing operations. Laser cutting, drilling, welding, and heat-treating of metals and other materials present both laser beam hazards and non-beam hazards in materials processing. The one-day Industrial Laser Safety course from LIA will address these issues in detail and present methods of how to minimize these hazards. This course will also identify national regulations and standards designed to address the issue of laser safety. This course meets all training requirements outlined by ANSI, OSHA, and ACGIH and will be held on June 8, 2006 in Plymouth, Mich. and is being hosted by Trumpf, Inc. Course fees are $199 for LIA members and $249 for nonmembers.

Mark Your Calendars

The 25th International Congress on Applications of Lasers & Electro-Optics (ICALEO® 2006) will be held Oct. 30-Nov. 2, 2006 in Scottsdale, Ariz. ICALEO will include the Laser Materials Processing Conference, the Laser Microprocessing Conference, a Poster Presentation Gallery and the Laser Solutions Short Courses. Highlighted sessions including fiber laser processing, laser processing of biological material, laser processing in the aviation, defense, and space industry, lasers in material processing diagnostics and in nano-technology, and the Laser Business Development Session. Don't miss the President's Reception to be held at Taliesin West, Frank Lloyd Wright's winter home, studio and architectural laboratory in the foothills of the McDowell Mountains. Sponsorship and vendor opportunities are still available. For more information, visit www.icaleo.org or contact Beth Cohen bcohen@laserinstitute.org.

2006 25TH INTERNATIONAL CONGRESS ON APPLICATIONS OF LASERS & ELECTRO-OPTICS

ICALEO®

OCTOBER 30 - NOVEMBER 2 • DOUBLETREE PARADISE VALLEY RESORT • SCOTTSDALE, AZ USA

ICALEO® 25th ANNIVERSARY

The International Congress on Applications of Lasers & Electro-Optics (ICALEO®) has a 24-year history as the conference where researchers and end-users meet to review the state-of-the-art in laser materials processing and predict where the future will lead. From its inception, ICALEO® has been devoted to the field of laser materials processing and is viewed as the premier source of technical information in the field. ICALEO® has been referred to as "the best kept secret of the laser materials processing world!" Join LIA for four days of learning, networking and connecting with the industry's best and brightest!

Laser Industry Tabletop Exhibit & Reception
Tuesday, October 31
Space still available - call for details! 407.380.1553

Laser Materials Processing Conference - Sponsored by LASAG Industrial-Lasers
Conference Chair: Paul Hilton, The Welding Institute, Cambridge, UK

Laser Microprocessing Conference - Sponsored by Coherent, Inc.
Conference Chair: Yongfeng Lu, Univ. of Nebraska Lincoln, Lincoln, NE, USA

Highlighted Conference Topics include

- Fiber Laser Processing
- Laser Processing of Biological Material
- Laser Processing in the Aviation, Defense, & Space Industry
- Lasers in Materials Processing Diagnostics
- Lasers in Nanotechnology
- Laser Business Development Session -
  Learn how to start a laser company, job shop initiatives, marketing, and much more!
- Lasers in a Green Economy
- Nanomachining
- Glass Micromachining

Go to www.icaleo.org to download the Advance Program and to register today!

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