



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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September/October 2007

In The News...



World's First 40G Silicon Laser Modulator

Intel® has produced the very first silicon-based laser modulator operating at 40 Gbit/s, reports the July 25 issue of *Optics.org*.

"In January 2007, we designed and fabricated a new type of silicon optical modulator scalable to >10 Gbit/s and demonstrated data transmission at 30 Gbit/s. The modulator still relies on the free-carrier effect, but its high speed is the result of a unique device design with traveling-wave drive scheme," said Principal Engineer Ansheng Liu.

"With a similar device configuration, the modulator performance has been further improved by better device packaging to reduce the parasitic effect, better traveling-wave electrode with lower RF attenuation, and better modulator termination circuitry. This has allowed us to reach the goal of data transmission at 40 Gbit/s speed.

"The Intel modulator is based on a Mach-Zehnder

(Cont. on pg.12, see **In The News...**)

Walt Disney World of Lasers

by Yongfeng Lu

By providing tomorrow's dream, Walt Disney World® attracts thousands of children and adults from all over the world each day. In a similar way, the International Congress on Applications of Lasers & Electro-Optics (ICALEO®) has continuously provided dreams of future scientists, engineers, and business leaders for whom lasers are a part of their lives.

The 26th ICALEO will be held Oct. 29-Nov. 1, 2007 at the Hilton in the Walt Disney World Resort in Orlando, Fla. ICALEO® 2007 will include the Laser Materials Processing Conference and the Laser Microprocessing Conference, as well as a Poster Presentation Gallery, the Laser Solutions Short Courses, and a Laser Business Insight Panel Discussion. Furthermore, an exciting new conference has

been added for 2007 devoted strictly to nanomanufacturing.

The Plenary Session

The world of lasers, like Disney World, has never been boring. Year after year, we have been experiencing breakthroughs in science and fast development in engineering and business. If you count the number of laser-related Nobel prizes in physics and chemistry and the dollar amount of the laser industry, you would agree that lasers are a driving force of great inventions and social development.

Where are new frontiers of lasers and photonics? Lasers can be characterized by speed (pulse width), color (wavelength), and energy (power). We will have three prominent leaders

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

Industrial Lasers Today

by Stephen Lumbert

As we get closer to the 26th International Congress on Applications of Lasers & Electro-Optics (ICALEO® 2007) and its exciting conferences and speakers, now is the perfect chance to examine a sampling of the promising developments in the arena of industrial lasers today. There are an ever-increasing number of advancements in laser technology resulting in new systems, techniques and applications taking up shop in the industrial sector. Additionally, some niche markets for lasers in the entertainment and cosmetic sectors have grown exponentially in the last few years.

For example, the scope of laser applications in entertainment has grown to the extent that the cost of low-power lasers specifically designed for entertainment venues has dropped to the point where a nascent garage band can afford a laser light show. Also, the use of lasers in certain medical and cosmetic procedures is so prolific in American society that coupons for services such as corrective eye surgery and laser hair removal are now appearing in newspaper advertisements and mass mailed coupon books.

However, industrial lasers are more commonly referenced as tools for manufacturing, research, and measurement. Some of the more

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

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LIA TODAY

The Official Newsletter of the Laser Institute of America

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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 international 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

Dec. 3-5, 2007 • Miami, FL

Medical Laser Safety Officer Training

Nov. 9-10, 2007 • Raleigh, NC

Jan. 25-26, 2008 • Tampa, FL

Feb. 22-23, 2008 • Las Vegas, NV

Laser Safety Officer with Hazard Analysis

Oct. 29-Nov. 2, 2007 • Orlando, FL

Feb. 4-8, 2008 • Orlando, FL

Mar. 10-14, 2008 • Las Vegas, NV

ICALEO[®] 2007

Oct. 29-Nov. 1 • Orlando, FL

Basics of Laser Safety

Oct. 11-12, 2007 • Memphis, TN

PICALO 2008

April 16-18, 2008 • Beijing, China

Industrial Laser Safety

Nov. 8, 2007 • San Diego, CA

ALAW 2008

May 13-15, 2008 • Plymouth, MI

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

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Wilson also offers a variety of **Laser Eyewear**, designed for added protection for both operators



and those nearby. This fine quality Eyewear prevents eye injury from errant laser beams.

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President's Message



LIA President Bill Shiner

As my term as president of LIA is nearing an end, I would like to thank all of you for the support I have enjoyed throughout the year. I have tremendous respect and admiration for the dedicated staff of the LIA, under the direction of Peter Baker, and for the many accomplishments they have achieved throughout the year.

The first ALAW under combined ownership of the LIA and FMA was a major success, with planning underway for an even more successful event in 2008. This year's ICALEO® conference will be the biggest yet with a record number of submitted papers and an expansion of tabletop exhibitors. Planning for the PICALO 2008 conference, being held in Beijing, China from April 16-18, is well underway with both American and Chinese sponsors committed with presentations submitted from Europe, Asia, and the United States.

The second printing of the *Laser Application Resource Guide* is already in progress with additional LIA member companies joining the publication. The guide has proven to be a very valuable asset for engi-

neers looking for products and services offered by our member companies.

I would like to invite and encourage those companies that currently are not corporate members of LIA to strongly consider joining us in supporting the LIA's mission of propagating the advancement of laser technology and the safe use of lasers throughout the world. We need your representation on our various committees and the board of directors to continue this important task.

When considering membership, please ask yourselves what if the LIA did not exist? The LIA has been the golden thread of our industry, bonding us together in our common interests, providing an outlet for the advancement of new applications, new laser technology, and providing networking opportunities and friendships that are invaluable. I feel that all of us that are benefiting from the activities of the LIA have an obligation to provide our financial support and participation. We need your support!

Executive Director's Message

Advancing the Application of Lasers



LIA Executive Director
Peter Baker

As we close in on LIA's 40-year anniversary, we have been consistent in our cause – advancing the application of lasers.

For 26 of these years, one of the main ways we have advanced this cause is through our International Congress on Applications of Lasers and Electro-Optics (ICALEO®). Thanks to the great work of the general chairs, session chairs, speakers and LIA staff, we have consistently provided a quality event that attracts the very best speakers in our field. Each year we listen carefully to the feedback from the participants and each year we evolve and improve the congress, building excellence and momentum. This year, for example, we are adding a whole new conference on

nanomanufacturing, reflecting the growing interest in this field and featuring internationally known research authorities.

This year's ICALEO will be in our hometown of Orlando and the President's Reception on Monday, October 29 will be in Downtown Disney® Pleasure Island Motion's Nightclub. So, come to Orlando, enjoy another record-setting event and keep advancing the cause!

See you in October!

pbaker@laserinstitute.org

ICALEO, cont. from pg. 1

in their fields tell us more about the future of lasers and photonics in the plenary session.

Professor Ferenc Krausz at Max Planck Institute of Quantum Optics (Garching, Germany)

will give a talk on attosecond physics. Fundamental processes in atoms, molecules, as well as condensed matter are triggered or mediated by the motion of electrons inside or between atoms. Electronic dynamics on atomic length scales tends to unfold within tens to thousands of attoseconds (1 attosecond = 10^{-18} s). The key to accessing the attosecond time domain is the control of the electric field of (visible) light, which varies its strength and direction within less than a femtosecond. Full control of the electromagnetic field in laser pulses compris-

ing a few wave cycles has recently allowed generation and measurement of isolated sub-femtosecond xuv pulses, demonstrating the control of microscopic processes on an attosecond time scale. These

and the related disciplines, a new generation of photonic tools is within reach. Now we have the means and the insight to create photonic systems that will fully exploit the unique powers and potentials inherent

Xinbing Liu and his team creatively organized this year's program for the Laser Microprocessing Conference. Laser microprocessing is becoming an enabling tool for a variety of industries that

demand ever more precise features at micrometer or even smaller dimensions. Ultrafast laser processing continues to be a mainstay, as well as nanosecond



26TH INTERNATIONAL CONGRESS ON APPLICATIONS OF LASERS & ELECTRO-OPTICS

ICALEO



October 29 - November 1, 2007 • Hilton in the WALT DISNEY WORLD® Resort • Orlando, FL, USA

tools have enabled us to visualize the oscillating electric field of visible light with an attosecond "oscilloscope", to control single-electron and probe multi-electron dynamics in atoms, molecules and solids.

Dr. Colin Seaton from Coherent, Inc. (Santa Clara, CA, USA) will make a presentation on RGB laser sources for projection displays. The laser-based plays have unrestricted depth of focus, excellent color saturation, high contrast ratio, and high resolution. Each individual pixel is created by collinear superposition of three laser beams in the image. It is a technology that will make our future entertainment more colorful and exciting.

Dr. Reinhart Poprawe from Fraunhofer ILT (Aachen, Germany) will share with us his views in a presentation titled Photonics in the 21st Century. Photonics is a driver for technological innovation and one of the most important key technologies for markets in the 21st Century. Due to groundbreaking progress in photonics

to light. Just as the technological breakthroughs of the 20th Century were enabled by the utilization of the electron, the 21st Century will very likely prove to be the century of the photon.

Laser Materials Processing and Laser Microprocessing Conferences

Paul Denney and his team have put up an exciting program for the Laser Materials Processing Conference. One of the drivers for this field is the development of new and improvements to existing solid-state lasers (disk, fiber, and direct diode). This year will have sessions on high brightness lasers and diode technology. In addition to new laser technologies, approaches to manufacturing needs are also a major topic at this conference. The ability to tailor a structure through direct metal deposition (DMD) or to repair/refurbish a worn part are two major driving forces for research efforts in additive manufacturing. For more controlled and understood processes, there will be sessions on Modeling & Simulation and Monitoring & Control.

pulse micro-drilling. Other sessions include fiber laser applications, surface modification, micro-welding/structuring/ forming/packaging, device manufacturing, deposition and process monitoring, biomedical applications, and light sources for microprocessing. A highlighted session on hybrid and other novel processing techniques will be presented.

Lasers are also being called upon to make an impact on the earth's environment. The Laser Materials Processing and Laser Microprocessing Conferences are jointly sponsoring a session on how lasers are being used for "green" applications that will have a positive impact on the earth and global warming.

Nanomanufacturing Conference

As nanotechnology research and innovation are progressing at exponentially rising rates, their promise for unprecedented societal impacts requires that the manufacturing issues be explored. The inaugural Nanomanufacturing Conference of ICALEO is initiated in 2007 to address the producibility, predictability and productivity aspects of



Professor Yongfeng Lu is the 2007 ICALEO general chair.

optical and laser-related nanotechnologies for nanomanufacturing and their scale-up for mass production. According to Haris Doumanidis, the conference chair, there are considerable outstanding research opportunities in far- and near-field electromagnetic materials processing, optical manufacturing processes and industrial platforms, as well as their hierarchical multi-scale integration across interdisciplinary energetic domains with nanomechanics, fluidics, thermodynamics, chemical and biological phenomena. This conference will highlight research in emerging technologies in laser

nanopatterning, holographic lithography, nanoparticle generation, pulsed laser deposition and sintering, micro/nano-machining, multi-photon polymerization, laser-assisted characterization and scanning probe lithography/microscopy, for a variety of applications including nanocomposites, flexible electronics, photovoltaics, biosensors, etc.

Additional Events

In addition to the technical conferences on laser materials processing, laser microprocessing, and nanomanufacturing, ICALEO 2007 has organized a Laser Business Insight

– Panel Discussion that should be of particular interest for participants who would like to gain more information and experience in the laser business. Valuable experience will be presented, and there will be plenty of time to interact with colleagues and experts.

Moreover, the Laser Solutions Short Courses are ideal for those who want to receive a complete overview on the state-of-the-art in laser processing. A series of five short courses taught by industrial photonics experts will address fundamentals related to lasers, optics, material processing, and applications and

are designed to complement the other ICALEO activities.

The ICALEO 2007 Vendor Tabletop Display & Reception will be an important networking opportunity to discuss individual ideas with industry representatives. Additional social events include the President's Reception, the LIA Annual Meeting & Awards Luncheon, and the Meet & Greet Fiesta. For more information, visit www.icaleo.org. *

Yongfeng Lu, the ICALEO 2007 general chair, is a professor at the University of Nebraska-Lincoln.

BECOME A CERTIFIED LSO TODAY!

Why Become Certified?

As the use of lasers grows both in popularity and applications, there will be a growing demand for trained laser safety professionals. BLS certification will enhance the credibility of a designated Laser Safety Officer, and demonstrate that individuals serving in the field of laser safety have agreed to adhere to high standards of safety and professional practice.

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- ☀ Gain a competitive edge
- ☀ Stay current on changes in the industry
- ☀ Achieve recognition
- ☀ Become part of a unique worldwide network of laser safety professionals
- ☀ Connect with other CLSOs and CMLSOs to share solutions

Examination Information

It is easier now more than ever to take the exam. All Certification exams are offered via Computer Based Testing. We have over 320 exam locations in the US and Canada. The bottom line is you can take the exam when and where **you** want at **your** convenience.

BLS Background

The Board of Laser Safety (BLS) was incorporated in September 2002 as a nonprofit organization affiliated with the Laser Institute of America (LIA), a California nonprofit corporation. The mission of the BLS is to provide a means for improvement in the practice of laser safety by providing opportunities for the education, assessment, and recognition of laser safety professionals.

Take the Next Step!

What are you waiting for – call the BLS today for an application at 800-345-2737 or visit our website to download one at www.lasersafety.org.



Board of Laser Safety™

Industrial, cont. from pg. 1

common examples are laser welding, cutting, and engraving, but one of the most exciting growth areas of industrial laser applications and the focus of a new conference at ICALEO 2007 is nanomanufacturing.

The Nano World

Nanomanufacturing, also known as nanoprotyping, nanomachining, or nanofabrication, or the process of working with materials within the sub-100nm realm, has finally begun to come into its own. Applications like creating metal nanoarrays by accessing and manipulating the hydrodynamic instabilities in metal films have the potential to revolutionize the laser manufacturing of solar panels and optical storage devices. Laser sintering, or using lasers for the deposition of materials onto nano-scale wires and other substrates is another potential industrial

laser application. For example, laser sintering may enhance additive manufacturing and the ability to repair or refurbish worn parts.

Laser ablation techniques use lasers to blast or chop nanoparticles from a solid source substrate immediately into a prepared liquid. These procedures can enhance our ability to manufacture stable nanomaterials. Another result is the complete dispersion or lossless embedding of nanoparticles into another material. Additionally, since no chemical agent or catalyst is used in laser ablation processes, the products are extremely pure allowing for improved quality control. One example is the use of low-power femtosecond laser pulses to snip out nerve axons, nano-size elements of nerve cells that transport nerve signals to muscles or to other cells. Advances in laser measurement and calibration stan-

dards or laser metrology are key enablers for manufacturing biomedical devices and nanosensors. Laser metrology today includes tools that confirm fabrication tolerances in nanometer range. In order to achieve the real potential of creating and manufacturing new nanomaterials, biodevices, and other nanoproducts, a successful metrology infrastructure is required. However, laser metrology also has applications in the macro world.

The Paranal Observatory (Paranal, Chile) uses a laser metrology system to enhance the results of observations made by the very large telescope interferometer (VLT). This system monitors the optical path of the captured stellar light over a subterranean optical path approximately 200 meters long involving 25 mirrors before reaching the Paranal Observatory's Interferometric Laboratory. The laser metrics system used has an accuracy goal of 5nm¹.

Today's Industrial Lasers

Industrial laser material processing has seen great improvements in the last few years and one of the drivers is the development of improvements to existing solid-state lasers such as disk, fiber, and diode. The optical and operational characteristics of these enhanced lasers have resulted in the displacement of many existing lasers and other processing technologies while encouraging the development of new processes. Industrial laser processes make it possible to perform amazing manufacturing tasks today. For example, today's state-of-the-

art facilities can employ deep penetration laser welding and engraving, cladding, 3d profile cutting or laser machining in a range of tolerances from macro to nano.

Optical fiber lasers are closer to becoming the laser of choice in many industrial applications. One reason is the ability to house the laser in a different location than that of the workstation. This has been beneficial in dangerous situations like the welding of explosive products or workspaces that are restricted or expensive. Fiber lasers are now available off-the-shelf with power outputs of 200W for use in such applications as:

- Cutting thin metal
- Micromachining
- Precision welding
- Marking & Engraving
- Rapid Prototyping
- Selective Layer Melting

Hybrid laser welding is another topic that will also be covered at ICALEO 2007 during the Materials Processing Conference. This process combines the use of laser(s) with various gas metal arc-welding techniques to produce deep penetration welds and better gap tolerance. Examples of hybrid laser welding today can be found in shipbuilding yards and where dissimilar metals like aluminum alloys to stainless steel is needed. Specialty weld seams of helical, rectilinear, or even spiraled shapes can be produced using hybrid laser welding processes.

Environmentally friendly manufacturing is an important topic to the public, regulatory bodies, and stockholders today. Subsequently, most people involved warmly



Today's state-of-the-art facilities deploy lasers to meet the challenge of a wide variety of applications.

¹<http://www.eso.org/projects/vlti/publink/2001/ODIMAP3.pdf>

²<http://www.ndcee.ctc.com/media/tasks/Task%20N219%2004-05.pdf>

receive any new processes or products that can make industrial lasers more eco-friendly. Laser marking processes are generally "green" by nature. No chemicals, ink, or environmentally unfriendly chemical solvents are used for most laser marked products, which range from paper or metal labels to food products. Additionally, industrial lasers have been used by the United States military to strip radomes and helicopter blades in a project involving two Department of Defense testing facilities. The initial results reported by the Defense Center for Environmental Excellence (NDCEE) "show that effective implementation of laser

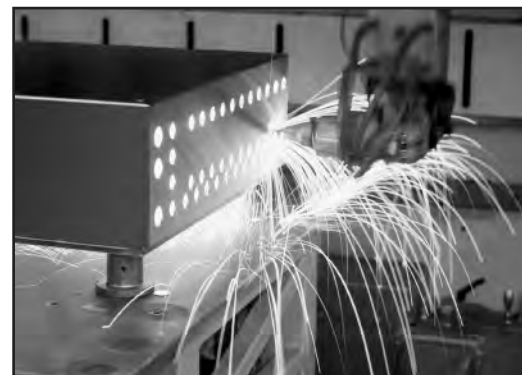
decoating technology provides the following benefits:

- Reduced environmental impact
- Reduced health and safety risks
- Decreased operating costs
- Enhanced capability to apply advanced coating systems (by providing an effective means to remove them)².

Finally, the implementation of industrial lasers has a broad impact on manufacturing today, and what the future will bring can only be imagined.

These examples of industrial lasers and their impact are just a very small sample of topics and information the ICALEO 2007 conferences,

development sessions, and short courses will have to offer attendees. ICALEO includes a plenary session, Laser Materials Processing Conference, Laser Micro-processing Conference, Nanomanufacturing Conference, Poster Presentation Gallery, Laser Solutions Short Courses, a President's and Vendor Reception and much more. It will be held Oct. 29-Nov. 1 in Orlando, Fla. at the Hilton in

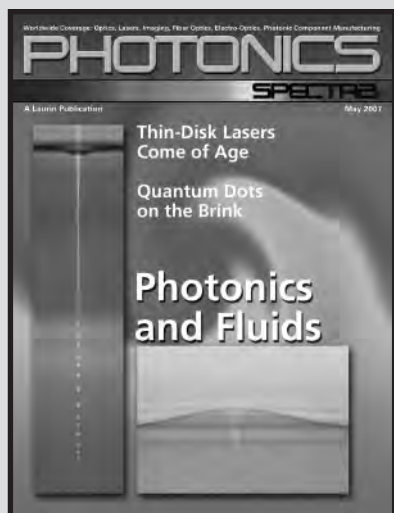


For all the latest information on lasers and their applications, plan to attend ICALEO 2007 in Orlando, Florida.

the Walt Disney World® Resort. For more information on ICALEO 2007, visit www.icaleo.org. *

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LIA Partners With OP-TEC to Enhance Opportunities in Optics and Photonics Education

The Laser Institute of America (LIA) has recently joined forces with OP-TEC, the

support the promising future of this important new technology. Conferences held by LIA, such as the International

TEC will promote the services and materials of LIA.

“LIA and OP-TEC have teamed together to pursue similar goals in moving the photonics industry and photonics education forward,” said Dr. Fred Seeber, co-principal investigator of OP-TEC.

schools by providing workshops, instructional materials, assessment, faculty development, recruiting, and support to the institutions that offer courses in these fields. Advancements in photonic technology and the lack of skilled technicians throughout the nation have created a high demand that requires support from organizations such as LIA and OP-TEC.

In the next four years, OP-TEC is projected to produce an average of over 1,800 skilled technicians annually and have over 150 colleges and over 400 high schools using its materials and services. *

OP-TEC

National Center for Optics and Photonics Education

National Center for Optics and Photonics Education located at CORD in Waco, Texas. The partnership intends to expand education in the growing field of optics and photonics, and

Conference on Applications of Lasers & Electro Optics (ICALEO®), will promote the services and materials of OP-TEC. Likewise, workshops and conferences held by OP-

National Science Foundation in 2006, the mission of OP-TEC is to integrate optics and photonics education into the curriculum of secondary schools and post-secondary

Program Mission

Recently funded by the



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In The News, cont. from pg. 1

interferometer with a reverse-biased pn junction in each of the arms. When a reverse voltage is applied to the junction, free carriers – electrons and holes resulting from the n- and p-dopants – are pulled out of the junction, changing its refractive index via the free-carrier effect. To minimize the RC constant limitation, Intel researchers adopted a traveling-wave drive scheme allowing electrical and optical signal co-propagation along the waveguide. The traveling-wave electrode was designed to match the velocity for both optical and electrical signals, while keeping the RF attenuation small.

With the demonstration of the 40 Gbit/s silicon modulator and the electrically pumped hybrid silicon laser, it will become possible to integrate multiple devices on a single

chip that can transmit terabits of aggregate data per second in the near future - truly enabling tera-scale computing.

Alliance Nets UK grant

A project looking to “promote the UK to the forefront of leading research” into GaN LED light sources has earned \$3.4 million in funding from the UK government, reported the Aug. 2 issue of *Optics.org*. The partnership, which began in March, is called NoveLELS. It will run for three years and involves nine different participating institutions. The LED technology development will rely heavily on the two academic partners, using Brunel University’s expertise in phosphors, and HVPE and MOCVD techniques developed by Wang Nang Wang at the University of Bath.

The collaboration hopes to

use Wang’s processes to increase yields and make GaN LEDs on 4-inch wafers, combining it with the technology of the other partners to reduce cost per lumen in solid-state light sources. IQE will contribute epitaxial foundry services to help achieve these targets. The ultimate aim is to develop LED products that could enter commercial production – although no volume manufacturing is planned in the collaboration. The three remaining partners, AgustaWestland, Airbus UK and GE Aviation, will provide specifications and testing.

America COMPETES Act Brings Changes to NIST

On Aug. 9, the President signed the America COMPETES Act (Public Law Number 110-69), which authorizes funding for the National

Institute of Standards and Technology (NIST) for the next three years. Several provisions have immediate consequences for NIST and related Department of Commerce agencies and programs. The statute authorizes a NIST budget of \$863 million for FY 2008. This includes funding for NIST’s portion of the President’s American Competitiveness Initiative, which puts NIST’s core programs (laboratories and facilities) and two other science and technology agencies on track to double their R&D budgets over 10 years. The FY 2007 budget for NIST was \$676.9 million.

The act eliminates NIST’s Advanced Technology Program (ATP), but allows for continued support for previous and pending ATP awards. The same statute creates the

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Technology Innovation Program (TIP). The act also eliminates the Department of Commerce's Technology Administration (TA).

Laser Fusion Project Wins Go-Ahead

A UK-led team of scientists has won European Union approval to prepare the ground for a laser-based nuclear fusion facility. The HiPER (high-energy laser fusion research) team will now start a three-year project to define the technologies that will be used to build an experimental prototype, reports the Sept. 6 issue of *Optics.org*.

Other large-scale laser facilities, such as Mégajoule and the National Ignition Facility now being constructed in Livermore, Calif., have been designed for military applications, but the primary purpose of HiPER will be to generate energy from nuclear fusion. The team is therefore focusing on the development of an all-optical "fast ignition" fusion process that it believes will be more suitable for commercial power generation plants. The ultimate aim for the HiPER project is to develop the technology needed for a commercial power generation plant. *

LIA and OSHA Renew Alliance

The Laser Institute of America (LIA) has recently renewed its alliance with the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) to continue providing its members with important information to help prevent exposure to laser beam and non-beam hazards in industrial and medical workplaces.

"Through this cooperative alliance, OSHA and the LIA are focusing on sharing information on laser regulations and standards, the bioeffects that lasers have on the eyes and skin, laser control measures, and laser safety program administration," said Edwin G. Foulke Jr., assistant secretary of labor for OSHA.

"For example, the alliance has produced the Laser Safety Information Bulletin that was also developed into a podcast by the LIA. This information is beneficial to employers and employ-

ees in the medical, industrial, military, research and development, and optical fiber communications industries."

"LIA is pleased to renew this alliance, which gives us an opportunity to continue the partnership with OSHA on laser safety training and education in the workplace," said LIA's Executive Director Peter Baker. "We are committed to working together with OSHA to educate not only their employees, but all laser users on the safe use of lasers."

Through the alliance, LIA members contribute information about laser safety to the online editorial boards on four of OSHA's Safety and Health Topics pages. For additional information or a sample copy, contact Rich Greene at 407-380-1553, rgreene@laserinstitute.org, or at Laser Institute of America located at 13501 Ingenuity Drive, Suite 128, Orlando, FL 32826.

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Hyphosited Systems unveils microfluidic development instrument
January 11, 2006, Burlingame, CA
Microfluidic Systems, a provider of rapid microscopes for 3-D imaging and metrology

Shenzhen Century Fellow to build semiconductor laser unit
January 10, 2006, Beijing, China
Shenzhen Century Fellow of South China's Guangdong province has been approved

Edmund receives DoD funding for optics manufacturing
January 9, 2006, Barrington, NJ
Edmund Optics has received \$2.8 million in U.S. Department of Defense (DoD)

Brummet Leitch, holography pioneer, dies at 98
January 9, 2006, Ann Arbor, MI
Edmund Leitch's scientific work took the concept of the hologram and added life

Current Issues, Newsletters and Resource Guide

PP22 secures funding to improve lens manufacturing
January 6, 2006, Westerville, OH
Precision Products Group, Inc. (PPG) received \$700,000 in proceeds from PP22

FT-15W simultaneously analyzes multiple components in vitro
January 4, 2006, Madison, WI
Thermo Electron's FT-15W is the new addition for

Sabil partners with Carl Zeiss for display technologies
January 3, 2006, St. Petersburg, FL
Carl Zeiss is developing optoelectronic products as part of a joint venture

Nitelays gets Border Patrol contract for IR imagers
January 3, 2006, Tempe, AZ
The U.S. Department of Homeland Security has

→ PAGE 164
Manufacturers' Product Showcase

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An LIA corporate member since 1988, Lee Laser's fundamental business is the manufacture and OEM sale of industrial grade solid-state lasers to other companies that integrate Lee Laser's lasers into their products for ultimate resale to end-users. Located near the LIA offices in Orlando, Fla., ninety-five percent of Lee Laser's laser business is in the area of OEM sales. In the U.S., Lee Laser is the largest OEM solid-state laser source for these types of lasers.

About the Company

Chong Lee (currently a senior advisor for the company) founded Lee Laser in 1984. Today's president is Don Bishop. In 1996, Lee Laser purchased its present facility that now contains 37,000 square feet of office and manufacturing space. Lee Laser's sole facility is located in Orlando, where it has full product development facilities. The company manufactures all of its laser products at this same facility and currently has 50 employees.

"Lee Laser was formed in 1984 as an OEM source for continuously-pumped and Q-switched Nd:YAG lasers for industry and science. Using the most reliable electronic and solid-state laser technology, the company designed the uniquely new Series 700 lasers to fill a market void created by existing products that had changed little over the previous 15 years. Since then, Lee Laser's product line has expanded to include both lamp-pumped and diode-pumped CW and Q-switched 1064nm lasers up to 1000 Watts for marking, trim-

Lee Laser

ming, scribing, welding and cutting," said Lee Laser's Vice President/Sales Bob Schricker.

"Our 532nm lamp-pumped and diode-pumped lasers up to 250 Watts have become highly sought for a variety of diverse industrial and scientific applications from PIV to Ti:Sapphire pump sources to semiconductor and solar-cell manufacture. Since 1996, we have introduced 1064nm pulse-lamp-pumped and pulsed-diode-pumped lasers up to 100 Watts for micro-cutting of medical stent devices and stencil masks for SMT. Finally, Lee Laser specializes in OEM engineering to enhance fit, form and function of our lasers into our customers' micro-machining systems."

Staying Competitive

The largest industry growth Schricker has seen during the last five years has clearly been in diode-pumped solid-state (DPSS) lasers, and especially those with emission wavelength of 532nm, he said. "Major growth has developed in high-power lasers at 532nm, with a delivered base of approximately 100 lasers with output power in the 100-200 Watt range."

"Historically, Lee Laser's best selling products have been the lamp-pumped Series 700 Nd:YAG lasers, and the upgrade Series 800 Lasers that followed. In 1997, Lee Laser introduced the diode-pumped Series LDP Nd:YAG lasers that complimented their lamp-pumped equivalents, followed in 2004 by the highly compact Series LEP DPSS lasers that

can perform many of the same applications. Together, these product lines represent an installation base of nearly 10,000 lasers," he explained.

Schricker explained how fiber lasers have become a clear competitor for some micro-machining applications and that Lee Laser's future growth will be in applications areas that are not accessible to fiber lasers. At Photonics West 2008, the company will introduce UV lasers with output power up to 10

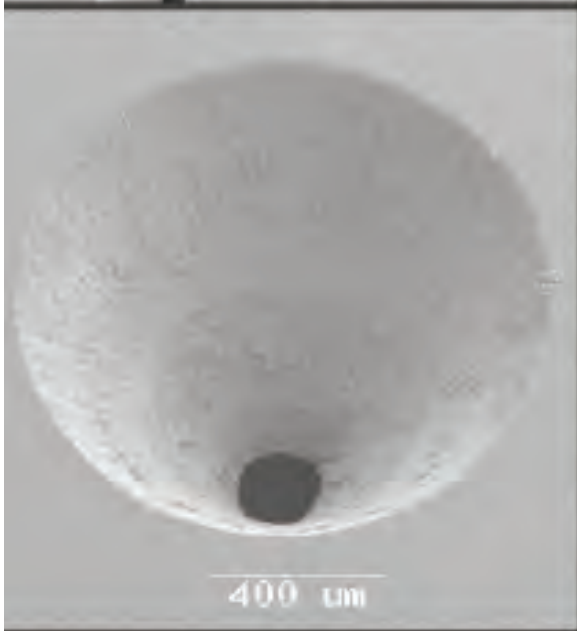
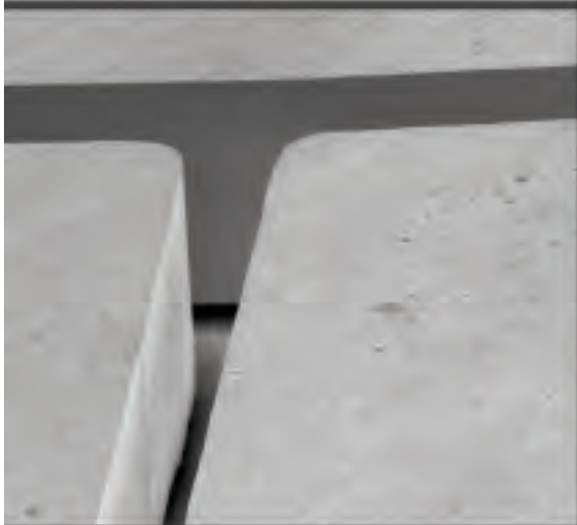


Model LDPP-50M, pulsed diode-pumped Nd:YAG laser is used to precision cut thin metals such as medical stents and stencil masks.

Watts at 355nm.

An LIA member for almost 20 years, Lee Laser sees the value in belonging to the society. "The LIA is a great gathering place for members of the laser industry, users with serious interest in understanding the products that they need and use, and manufacturers with a serious interest to communicate their capabilities to the users. ICALEO® is one of the paramount dissemination sites for information about industrial applications of lasers," said Schricker.

For more information, visit www.leelaser.com. *



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ASC Z136 Update

Mark your calendars for these upcoming meetings!

- **October 10-11, 2007 – Z136 Technical Subcommittee (TSC) 4, Control Measures, Rockwell Laser Industries, Cincinnati, Ohio.** Book your stay at the Crowne Plaza Blue Ash/Cincinnati and ask for RLI corporate rates; business \$109, regular \$99, government \$103. For meeting information, go to www.z136.org and check the TSC-4 web page. Questions? Contact Bill Ertle at billertle@rli.com.
- **November 28, 2007 – ICES TC95, THz Ad Hoc Working Group Meeting, Irving, Texas.** The purpose of this half day meeting is to examine recent research in the wavelength region that overlaps the IEEE Radiofrequency/Microwave standard (IEEE/ANSI C95.1-2005) and the Z136 laser standard (ANSI Z136.1-2007). Although the MPEs are effectively the same at the frequency/wavelength interface between the two standards (300 GHz/1 mm), they were predominantly derived by the extrapolation of research results relatively far removed from 300 GHz. The ad hoc will examine new and pertinent research in this region in order to confirm or revise the current MPEs based on a scientifically defensible rationale. For additional information, contact Ron Petersen at r.c.petersen@ieee.org.
- **February 8, 2008 – ASC Z136 Annual Meeting, Orlando, Florida.** The annual meeting will be held at the Holiday Inn Select, Orlando International Airport starting at 8 a.m. on Friday. Various subcommittee meetings will be held in conjunction with the annual meeting beginning on Wednesday, Feb. 6 (SSC-6) and concluding Saturday, Feb. 9 (SSC-3). Meetings, schedules, and hotel reservation information will be distributed to ASC Z136 members. If you are interested in participating or observing the meeting(s), please contact Barbara Sams at bsams@laserinstitute.org.

Journal of Laser Applications® Update

The *Journal of Laser Applications*® offers the latest refereed papers by leading researchers in the laser community. The August 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 August 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.

Sign up at <http://scitation.aip.org/jla/alert.jsp> to receive your JLA table of content e-mail alerts.

Welcome New LIA Members

Corporate Members

- Cascade Laser Corporation, Newberg, OR
- Alliance Laser Sales, Inc., Wauconda, IL
- OK International, Inc., Garden Grove, CA
- QPC Lasers, Inc., Sylmar, CA

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

Individual Members

Mary Frazier, Pine Bluff, AR
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 Joe Garcia, Glendale, CA
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 Roy Lindahl, Santa Clara, CA
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Members In Motion

CVI Completes Melles Griot Acquisition

CVI, Albuquerque, NM, an optical and laser technology company, announced that it has completed the acquisition of Melles Griot from Barloworld Scientific Ltd. CVI and Melles Griot will operate under a unified management team and do business as CVI Melles Griot. With worldwide manufacturing and distribution in Asia, Europe, and North America, the new company is uniquely positioned to take a leadership position, supplying lasers, optical components, and opto-mechanical assemblies. This acquisition enables CVI Melles Griot to bring design, manufacturing, assembly, and testing of photonic

products and optical systems together under one roof. For more information visit www.cvimellesgriot.com.

Distribution and Service Agreement

Laser Mechanisms, Inc., Farmington Hills, Mich., has announced a partnership with Scansonic GmbH to distribute and service its seam tracking laser welding and brazing systems to the North American market. Scansonic's processing heads for automated laser welding and brazing of thin sheet metal are recognized worldwide as cutting edge manufacturing technology. According to the company, their solution for integrated seam tracking has made the

name Scansonic synonymous with car body manufacturing for the automobile industry. For more information visit www.lasermech.com.

Miyachi Unitek's Spanish Website Launched

Miyachi Unitek, Monrovia, Calif., has launched a Spanish language website. The new site is accessible either via a checkbox on the Miyachi Unitek home page or directly at www.muc.miyachi.com.mx. The new website offers Spanish speakers user-friendly access to Miyachi Unitek product and application information, news, and more, and is part of a larger outreach campaign that includes advertising and tradeshow participa-

tion in Mexico and Central and South America. The company designs and manufactures a full range of resistance welding and reflow soldering power supplies, heads, monitors and accessories for both large scale and fine spot applications requiring precision metals joining, hermetic sealing systems, and lasers and laser systems.

PhotoMachining Expands

PhotoMachining, Inc., Pelham, NH, has added 4,000 square feet to its floor space in order to accommodate more job shop platforms as well as for an equipment showroom. The company is positioning itself for the growth expected in the upcoming year. ✱

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LIA Announces

LIA Promotes Safety at ASSE Conference

Consistent with its mission to foster lasers, laser applications, and laser safety worldwide, LIA was an exhibitor at the annual American Society of Safety Engineers (ASSE) Professional Development Conference that was attended by more than 3,600 international safety professionals from 44 countries around the world. LIA is proud to have been part of the record number of exhibitors at the 2007 conference, which was held at the Orange County Convention Center in Orlando, Fla. in June.

At the conference, LIA made available the revised ANSI Z136.1 (2007) Safe Use of Lasers standard, which is the parent document and cornerstone of the Z136 series of laser safety standards. LIA continued its support of ASSE's foundation by providing a free laser safety training registration for its annual silent auction.

"This year's ASSE Conference not only set records for the show organizers but also for LIA" said LIA's Marketing Director Jim Naugle. "This year's show proved to us why we are here. We had overwhelming interest in our industry leading laser safety training courses, questions specifically geared toward the changes to the revised ANSI Z136.1, and record inquiries relating to our corporate members products and services."

LIA plans to expand its presence at ASSE next year and continue to promote its wide array of products and services to thousands of safety professionals.

LIA Teaches Laser Safety Via One-Hour Webcast

LIA recently provided the educational content for a webcast about industrial laser safety that streamed over the Internet on July 31, 2007. Industrial Laser Solutions hosted the webcast on its official website with sponsorship from Fumex and Kentek, both corporate members of the LIA. Topics such as laser accidents, beam and non-beam hazards, and control measures were addressed to users of industrial lasers during the one-hour webcast.

Gus Anibarro, education manager of LIA, instructed the course. Anibarro currently teaches courses on laser safety, and

this was his first time doing so via webcast. "It was a great new experience," Anibarro said. "I was able to reach an audience that was scattered all over the world."

Registered users viewing the webcast were able to email Anibarro questions, which he answered at the conclusion of the presentation. Among the many inquiries from laser users, Anibarro stated that the hazardous effects of laser beams on the eyes was of greatest concern. He looks forward to instructing more courses on laser safety by means of webcast in the future.

The laser safety webcast will be available on-demand for one year on the official website of Industrial Laser Solutions. For more information about the webcast, or to view it, visit <http://ils.pennnet.com/webcast>.

PICALO Approaching

The 3rd Pacific International Conference on Applications of Lasers and Optics (PICALO) will be held April 16-18, 2008 in Beijing, China. Presented by LIA in cooperation with Laser Processing Committee of China Optical Society and Tsinghua University, PICALO will focus on the growth and application of lasers and optics in the Pacific region. Topics such as aerospace, cutting and drilling, welding, manufacturing, research, software, and hybrid processes will be covered. New for 2008 is the PICALO International Enterprise Summit, discussing the impact of globalization on the laser industry. For more information on PICALO 2008, including sponsor and vendor display opportunities, visit www.laserinstitute.org/conferences or contact Beth Cohen at 800-34-LASER or e-mail bcohen@laserinstitute.org.

Laser Safety Bulletin Board

Got a concern or new idea relating to laser safety? Want to share some information? Then go to the Board of Laser Safety's (BLS) new online forum – the Laser Safety Bulletin Board. BLS, an affiliate of LIA, created this bulletin board to provide an online resource for improvement in the practice of laser safety. To use this new tool, go to www.laser-safety.org/forum. *

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