LIA TODAY

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

Volume 13, Number 6 **November/December 2005**

In The News . . .

Laser-Etching Promotes Egg Safety

Eggs that are laser-etched with an expiration date and a code that traces the egg back to where it was packaged are now available in the U.S., reported the Sept. 30 issue of *Optics.org*. Developed by EggFusion, the laser system etches a permanent, easy-to-read and tamper-proof mark on the eggshell that allows consumers to see when the egg should be used by. EggFusion uses a pulsed, sealed carbon-dioxide laser to etch the eggshells. The laser removes between 5 to 8% of the eggshell and the structural integrity of the shell is maintained. The etching kit is integrated into the existing machinery at a packing facility and happens as the egg is moving so it doesn't slow the packing process down.

In addition to the physical laser system, EggFusion also offers consumers the opportunity to type the traceability code into a database on its website. The code brings up a list of informa-

(Cont. on pg. 11, see **In The News…**)

ICALEO® 2005 Meets International Challenge

by Jack Dyer, Contributing Editor

The 24th International Congress on Applications of Lasers & Electro-Optics (ICALEO®) in Miami, Fla. starting Oct. 31, began just days after Hurricane Wilma tore through the southern part of Florida. All attendees, nevertheless, showed great interest in overview presentations on laser diodes, fiber lasers and new market opportunities.

General Congress

General Congress Chair Andreas Ostendorf, CEO of Laser Zentrum Hannover e.V. in Germany, opened with "ICALEO over these 24 years has fulfilled exceptionally well the LIA mission of fostering lasers, laser applications, and laser safety worldwide. Today it is the pacemaker of the laser materials processing world."

The very large international presence had participants from Europe, Asia, the United Kingdom, Canada and the United States. In addition to over 400 from the U.S., Germany had 47, Japan 31, United Kingdom 23, Finland 14, Canada 19, France 6, Netherlands 7, and Ukraine, Poland, Australia and several other countries made up the balance.

The commercial advent of many new laser systems has dominated the laser world the past several years, and Dr. Ostendorf said, the plenary session showed how these sources can be used for new applications.

Plenary: New Lasers – New Markets

Speaker Martin Behringer pointed to small

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

Laser Pioneer Passes

Gordon Gould
July 17, 1920-Sept. 16, 2005

by William T. Walter

Laser pioneer Gordon Gould died in Lennox Hill Hospital in New York City on Sept. 16 at age 85. Richard Gordon Gould was born in New York City, the son of a Scholastic magazine editor father and a mechanically gifted mother who stoked his interest in invention through gifts of an Erector set and similar toys. Thomas Edison became his early idol stimulating his lifelong interest to be an inventor.

Gould studied physics and optics receiving a bachelor's degree at Union College in 1941 and an M.S. in physics at Yale in 1943 where he used Fabry-Perot resonators in his studies of optical spectroscopy. After a draft-deferred job in a New York laboratory that was part of the Manhattan Project, work at a company that made specialized mirrors and teaching at City College of New York, Gould returned to graduate studies at Columbia University in 1951, where he began a doctoral thesis on optical pumping of a thallium atomic beam under Polykarp Kush and was also exposed to the early maser work at Columbia under Charles Townes. Many including Gould were pondering whether coherent sources could also be achieved in the infrared and optical spectral regions.

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LIA TODAY

The Official Newsletter of the Laser Institute of America

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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 www.laserinstitute.org

Laser Safety Officer Training
Feb. 6-10, 2006 • Orlando, FL
Mar. 27-31, 2006 • St. Louis, MO
May 8-10, 2006 • Pittsburg, PA
June 5-9, 2006 • Boston, MA
Aug. 7-9, 2006 • Denver, CO
Sept. 18-22, 2006 • San Francisco, CA
Oct. 30-Nov. 3, 2006 • Scottsdale, AZ
Nov. 6-10, 2006 • Las Vegas, NV
Dec. 4-8, 2006 • Orlando, FL

Advanced Concepts in Laser Safety
Mar. 13-15, 2006 • Orlando, FL

Medical Laser Safety Officer Training
Jan. 27-28, 2006 • Tampa, FL
Feb. 10-11, 2006 • Portland, OR
May 19-20, 2006 • Chicago, IL
Sept. 22-23, 2006 • Boston, MA
Nov. 10-11, 2006 • Las Vegas, NV

PICALO 2006
April 3-5 • Melbourne, Australia

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

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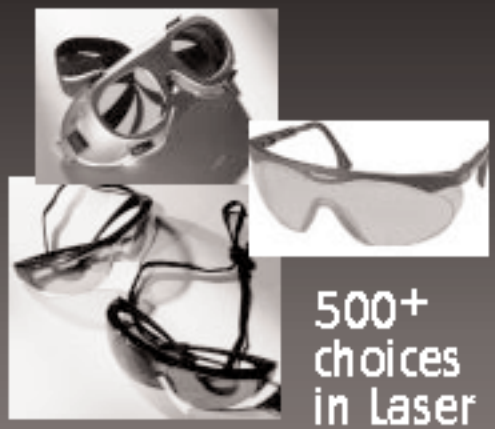

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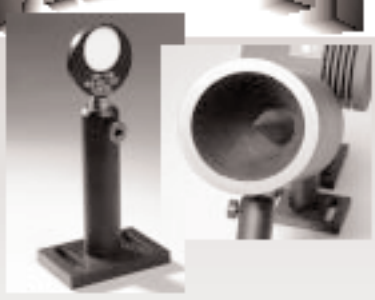

Executive Director's Message

LIA Executive Director Peter Baker

More Team LIA

In the last issue I talked about our alliance with OSHA, our teamwork on the new LIA Chapter and our discussions with other societies to find cooperating ways to carry out our mission.

At the recent LIA Annual Meeting at ICALEO®, I pointed out that everyone who attended the conference could see the power of teamwork in action. Everyone is part of team LIA – every member, every corporate member, every speaker, chair and author, every course instructor, ANSI committee member, every board member, officer, staff member, everyone.

It is your society (I can say our as I am a life member!), it serves your needs, so please send me your ideas and suggestions, tell me what is new and what you think we should do about it. Best of all, volunteer to work with the LIA staff and help make something good happen. Welcome to the team.

Peter Baker

pbaker@laserinstitute.org

ICALEO , cont. from pg. 1

size, high efficiency, ease of adjusting wavelength, and excellent reliability in touting the advantages of diode lasers for industrial applications. Besides chip technology, he said, new technologies for packaging have been developed and experiences with high power electronic devices and telecom lasers help introduce cost efficiencies and highly reliable devices for industrial use.

Future improvements and developments focus on beam quality, power and price. For example, a developing application is the pumping of disc and fiber lasers that require a further improvement of beam quality in order to better couple the light of the diode lasers into the active medium of the disc or the fiber.

Martin Behringer, OSRam Opto Semiconductors, Regensburg, Germany

Expressing the case for fiber lasers as the new wave in materials processing, speaker Silke Pflüger addressed the advantages of small size, maintenance-free operation, thermal and electrical efficiency, combined with outstanding (diffraction limited) beam quality, as making the fiber laser an attractive alternative to more established technologies.

Pflüger noted there is little need to use the traditional and often fragile Q-switching or mode-locking techniques, when better control can be obtained through amplification to the kW regime. Despite impressive results, fiber laser development is still in its infancy. This unique and powerful laser technology will increasingly be visible in the marketplace in coming years.

Silke Pflüger, SPI, Los Gatos, Calif.

Plenary paper Laser Materials Processing in China, with Henry Peng, of GE Global Research Center Shanghai, Peoples Republic of China, is not available on the congress CD. As China is one of the world's fastest growing markets, the paper reflects firsthand the current situation, and how a globally operating enterprise like General Electric organizes laser-based research activities in Shanghai. Dr. Peng's remarks will be featured in a future issue of **LIA Today**.

Laser Materials Processing – (Chair: Anthony Hoult, SPI, Southampton, U.K.)

In reviewing the abstracts of this congress, we see a great many more non-U.S. and non-European presenters. We are truly global and consequently are showing many new applications extending into the micro regime, Dr. Hoult said.

Two very new and novel laser types have debuted. Industry insiders have been following the emergence of disc lasers out of the lab and onto the shop floor. And high-powered industrial fiber lasers, resulting from the meltdown of the telecom industry, have arrived. Both bring important increases in brightness onto the industrial stage, leaving users with quite an array of hardware types from which to choose.

In an invited presentation that filled the conference room, Paul Denney of EWI, Columbus, Ohio described how fiber lasers may alter the applications of lasers in industries. In the last three years, he said, Yb-based fiber lasers have advanced from a few watts to many kilowatts. With high efficiency and excellent beam quality the fiber laser has many potential applications presently dominated by CO_2 and Nd:YAG lasers.

A special LMP Business Development Session included popular presentations by industry leaders Bill Lawson, Bill Clark, and Larry Dosser. More details on these interesting presentations will be available in a future **LIA Today** issue.

Laser Microfabrication Conference – (Chair: YF Lu, University of Nebraska, Lincoln)

An explosion of new ideas in the photonics and biomedical fields in recent years has created a unique need for fabrication of new miniaturized components. ICALEO is a global forum for engineers and scientists from a variety of industry segments and institutes to meet and discuss use of laser micro/ nanofabrication as a key technology for various applications. Highlights feature achievements in structuring with highest precision using laser pulses from the nanosecond down to the pico- and femtosecond time regime. Special sessions featured laser glass micromachining and laser nano-machining and processing in order to highlight the newest developments and their promising perspectives.

LMC Chair YF Lu

To highlight recent advances, Dr. Lu said, a keynote address by Henry Helvajian of The Aerospace Corporation, Los Angeles, posits the on-going development of a nearly all glass/ ceramic space micropropulsion system. Dr. Helvajian explains the optimum approach leading to ablation-free microfabrication is to utilize a material that can be engineered for true three-dimensional fabrication and to process the material in such a way collateral damage is minimized. A primary step in this direction is to utilize materials in which the properties can be tailored by slight compositional changes. Glass/ ceramics are an important class of materials that could allow the seamless integration of photonics, bionics, wireless communication, microelectronics, and microelectron mechanical systems (MEMS).

Henry Helvajian of The Aerospace Corp., Los Angeles, Calif.

Dr. Helvajian will author a detailed description of the process in a future issue **LIA Today**.

LIA's MLSO Course Now Online

The Laser Institute of America (LIA) is pleased to announce that one of its most popular courses – the Medical Laser Safety Officer (MLSO) course – is now available online, which offers the convenience of your home or office and saves money on travel expenses and time away from work. Proving extremely valuable and useful to those in the medical field, such as RNs and operating room personnel, the MLSO course is designed to give operating room personnel the safety information they need to perform the duties of a laser safety officer.

Upon completion of this course the participant will: understand laser biophysics and tissue interactions; understand and be able to apply the *ANSI Z136.3 Safe Use of Lasers in Health Care Facilities* laser safety standard; be able to list the effects and characteristics of different laser wavelengths on tissue; understand the current treatment modalities with lasers; know the responsibilities of a laser safety officer; understand the laser hazard classification system; understand protocols and recommended practices when implementing a laser safety program, and be able to explain the operational skills with the different laser delivery devices.

At the conclusion of the course there is a post-test and an evaluation submitted to LIA for the awarding of contact hours. This course is worth 14.1 contact hours and 2.0 BLS CM points by the Board of Laser Safety™. All course materials are electronic and downloaded when the course is purchased. Cost of the MSLO course is

$695 for LIA members or $795 for non-members. For more information call 1.800.34.LASER/407.380.1553 or visit www.laserinstitute.org.

Pioneer , cont. from pg. 1

Dreams and Drama

On Saturday night, Nov. 9, 1957 Gould was unable to sleep. In the middle of the night the realization came to him – that the parallel mirrors of a Fabry-Perot resonator would solve the problems of a low-loss cavity resonator for the laser light while allowing pump light to shine in and excite the medium optically. It didn't have to completely enclose the resonant light modes. Gould jumped from his bed and chain-smoking through the next four days wrote down in his notebook device descriptions, sketched its components and projected its future uses. These included optical pumping, discharge collisional excitation, Brewster-angle windows, Q switching, etc. – ideas that would not be brought to fruition for a number of years.

Peter Franken said, "That notebook is absolutely incredible. It's as if God came down and whispered in Gordon's ear and said, 'Listen, buddy this is what you're going to do.'"

On Wednesday, Nov. 13, Gould walked two blocks to the neighborhood candy store and had the proprietor, a notary, witness and date his notebook. The notebook was entitled "*Some Rough Calculations on the Feasibility of a LASER: Light Amplification by Stimulated Emission of Radiation.*"

Confused by a lawyer's advice, Gould thought he needed a working model before filing a patent application. He realized that pursuing his thesis at Columbia would prevent timely development of a working model, so he accepted a position at Technical Research Group (TRG) on Long Island. A proposal by TRG to develop lasers was enthusiastically accepted by the Advanced Research Projects Agency (ARPA) of the Department of Defense increasing the $300,000 requested to a million; however, the contract was classified and Gordon was denied security clearance because of his and his first wife's participation in a Marxist study group in Greenwich Village.

By the time work under the ARPA contract was well underway, Theodore Maiman had reported laser action in a ruby crystal and Ali Javan in a helium neon discharge in 1960. Both called their devices optical masers, but Gould's phrase, laser, would soon displace optical maser as the term for coherent emission in the infrared and optical regions.

Laser pioneer Gordon Gould spent years defending his patent for the laser.

The Plot Thickens

Gould filed his patent application on April 6, 1959, three months after Arthur Schawlow and Charles Townes published their paper, "Infrared and Optical Masers" in the December issue of *Physical Review* and more than eight months after they had submitted a patent application. The Patent Office granted Schawlow and Townes a patent in March 1960, and Gould lost his application for patent protection before the U.S. Court of Customs and Patent Appeals. He persisted by filing interference proceedings and then sought help to help defray their costs and had to give the dominant share of the patent rights to others to wage the legal battle that lasted almost three decades. During this time Gould became a professor of electrophysics at the Polytechnic Institute of Brooklyn in 1967 and in 1973 helped found Optelecom Inc., a maker of fiber optic equipment and systems in Gaithersburg, Md.

In 1973 the court, in a suit over Q-switch patents, ruled that the Schawlow-Townes patent did not adequately describe optical pumping of a medium. Because of the wide and diverse claims in Gould's application, it was divided into five separate interferences.

Finally in October 1977 the Patent Office issued Gould a patent on optical pumping of lasers. The following year he received a second patent on a broad range of laser applications including machining. In 1987 he received a patent on discharge pumping of lasers and in 1988 on Brewster-angle windows for lasers. The ups and downs of the three-decade laser patent battle may have been stressful; however, because the patents were postponed to run when the laser industry was mature instead of just beginning, Gould netted tens of millions of dollars.

Finally Fame

Gordon Gould was the president of LIA in 1971 (and later an LIA fellow), and in 1983 received the John Scott Award from the City of Philadelphia for the invention of the laser. He was inducted into the National Inventors Hall of Fame in 1991. He established a professorship at Union College in 1995 to honor the physics professor who sparked his interest in physics and optics. Gould's other interests included sailing and at one time he owned a boat called the Wonny Larue, named after an ancestor he claimed was a pirate. His wife, Marilyn Appel of Sag Harbor, N.Y., survives him. Gordon's insightful and inventive approach to physics and optics problems will be missed by all who worked with him.

William T. Walter is the president of Laser Consultants, Inc., Huntingdon, NY.

Quantum and Laser Physicists Win Nobel Physics Prize

Americans John L. Hall and Roy J. Glauber and German Theodor W. Haensch won the 2005 Nobel Prize in physics for work that could lead to better long-distance communication and more precise navigation worldwide and beyond, reported the Associated Press in *NYTimes.com* on Oct. 4, 2005. The prize was given to the three for their work in applying modern quantum physics to the study of optics. Engineers have used their observations to improve lasers, Global Positioning System technology and other instruments.

Glauber, 80, of Harvard University, took half of this year's Nobel for showing how the particle nature of light affects its behavior under certain circumstances. Although those conditions are rarely observed in nature, they are often relevant in sophisticated optical instruments.

Hall, 71, of the University of Colorado, and Haensch, 63, of the Ludwig-Maximilian-Universitaet in Munich, won "for their contributions to the development of laser-based precision spectroscopy, including the optical frequency comb technique." Hall and Haensch will split one half of the $1.3 million prize, with Glauber receiving the remainder.

"It's a huge surprise, a great pleasure," Hall said, noting that the work was a team effort. Speaking from his office in Munich, Haensch called the award a high point of his career. "I was speechless but of course very happy, exuberant," he said.

He said the fruits of their work could eventually be applied to improving communication across the globe and beyond. The research could also be useful in helping spacecraft navigate more accurately on long journeys, or creating better digital animation. "Eventually, we may be able to enjoy three-dimensional holographic movies," Haensch said.

"The important contributions by John Hall and Theodor Haensch have made it possible to measure frequencies with an accuracy of 15 digits," the academy noted. "Lasers with extremely sharp colors can now be constructed, and with the frequency comb technique precise readings can be made of light of all colors.

"This technique makes it possible to carry out studies of, for example, the stability of the constants of nature over time and to develop extremely accurate clocks and improved GPS technology."

Hall works for JILA, an institute ran by the University of Colorado and the National Institute of Standards and Technology. Two other JILA physicists, Eric A. Cornell and Carl E. Wieman, won the

Nobel in physics in 2001.

JILA originally stood for the Joint Institute for Laboratory Astrophysics. However, JILA's fellows decided to keep the name but drop the meaning in 1994 as the scope of its research widened.

Of the six Nobels, the physics prize has perhaps the broadest scope of research, making speculation ahead of the announcement difficult. Alfred Nobel, the wealthy Swedish industrialist and inventor of dynamite who endowed the prizes, left only vague guidelines for the selection committee, saying in his will that the prize should be given to those who "shall have conferred the greatest benefit on mankind" and "shall have made the most important discovery or invention within the field of physics." The prizes include a check for $1.3 million, and will be awarded by Sweden's King Carl XVI Gustaf at a ceremony in Stockholm in December.

In The News, cont. from pg. 1

tion such as where the egg was packed. Consumers can now tell exactly how fresh their egg is.

Eye Sensor Simplifies Glucose Tests

Lein Applied Diagnostics of the U.K. is developing an optical sensor that determines the glucose level of a diabetic via the eye's aqueous humor, reported the Oct. 7 issue of *Optics.org*. The technique involves no drawing of blood, is rapid (0.1s), and requires no consumables aside from a battery. Currently, glucose measurements are performed by pricking a finger and placing the blood sample into a small analyzer four or five times a day, which oftentimes is painful and inconvenient.

To protect the firm's IP, details concerning the optical design were not discussed but it was explained that the meter uses a confocal arrangement to localize the measurement in the anterior chamber of the eye. Light from a low power 670nm source is focused into the eye and the intensity of the light reflected back is analyzed. From this analysis the glucose level in the body is obtained. The technique requires an optical power in the microwatt level and the measurement time is only about 0.1s. It should be compatible with contact lenses.

Corkscrew Fiber Retrieves Blood Clots

A thin, straight polymer that takes the shape of a corkscrew when heated by a laser could help surgeons remove blood clots from stroke patients, reported the Oct. 10 issue of *Optics.org*. The device, developed by researchers at Lawrence Livermore National Laboratory (LLNL) may offer a safer alternative to clot dissolving therapy and could extend the treatment window from three to eight hours following a stroke (*Optics Express 13 8204*).

"The system is comprised of a near infrared diode laser coupled to a shape memory polymer (SMP) micro-actuator using an optical fiber," LLNL researcher Ward Small said. "The laser light is absorbed by a thin surface layer of a platinum dye, generating heat, that causes the SMP to transform into its pre-programmed corkscrew shape."

The polyurethane-based SMP device is connected to a diode laser emitting around 5W at 810nm. Immersed in water at body temperature, the polymer changes shape from a straight rod into a 10mm long spiral structure with a diameter of 3mm in just three seconds when irradiated. The scientists have tested their device using an artificial blood clot inserted into an experimental model of a carotid artery. The polymer device was pushed into the artificial clot, activated and used to pull back the occlusion against the flow.

Currently, the group is discussing its technology with medical device manufacturers and plans to conduct animal studies to further evaluate the technique. "Based on previous experience with another SMP-based interventional device, human trials could potentially begin 12 to 18 months after reaching a licensing agreement," said Small.

Researchers estimate that laser heating of the polymer would raise the temperature of surrounding blood by around 12 degrees, which can be sustained for around 15 minutes without causing permanent tissue damage.

Welcome New LIA Members

Corporate Members

- EggFusion, Inc., Boulder, CO
- Electro-Optic Services, Portland, OR
- Laser Express, Camden, Sydney, Australia
- Nalco Company, Naperville, IL
- Telsar Laboratories, Inc., Wood River, IL
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Members In Motion

DLI Installs Fiber Laser

Directed Light Inc., San Jose, Calif., has announced that it installed a new 100-Watt fiber laser from SPI at its advanced technology job shop. The fiber laser is the latest innovation in laser technology for industrial materials processing. The beam quality and high power density of the SPI fiber laser allows DLI to cut extremely small feature sizes (< .001 inch) and complicated geometries in a wide variety of materials. The new laser also provides DLI with smaller spot sizes with deeper penetration for its microwelding applications. Directed Light is a laser technology company serving the industrial, medical and scientific laser communities. For more information, visit www.directedlight.com.

Aculight Named in Deloitte's Technology Fast 50 Program

Aculight Corporation, Bothell, Wash., a developer of innovative laser technologies, has been named to Deloitte's prestigious Technology Fast 50 Program for Washington State, a ranking of the 50 fastest growing technology companies in the area by Deloitte & Touché LLP. Rankings are based on the percentage revenue growth during a five-year span from 2000-2004. Aculight's President and CEO Don Rich credits setting challenging goals and being accountable for achieving them with the company's 87% revenue growth from 2000-2004. This increase in revenues resulted in a 34 ranking in the program, marking the fourth time Aculight has made the prestigious list.

Melles Griot Repositions Catalog Distribution Business

Melles Griot, Carlsbad, Calif., has announced a strategic repositioning of its catalog distribution businesses in North America and Europe. The catalog, the tenth volume of which has just been released, provides a broad array of photonics tools for students and researchers. The extensive laser and optics manufacturing competencies of Melles Griot are also presented in the catalog.

The changes include regional call centers for order administration and technical support, centralized inventory and order fulfillment, unified procurement, and back-end integrated web trading. For more information visit www.mellesgriot.com.

Lockheed Martin Acquires Coherent

Effective Oct. 5, 2005, Lockheed Martin Corporation acquired Coherent Technologies, Inc. The new company will be referred to as Lockheed Martin Coherent Technologies (LMCT) and will remain headquartered in Louisville, Colo. Lockheed Martin Space Systems in Denver will manage LMCT as a wholly owned subsidiary. For Coherent, this partnership means visibility to a new level of customers as well as access to Lockheed's strategic and tactical platforms. It also will provide new capital resources to sustain Coherent's innovation and fuel its growth. For Lockheed Martin, its broad systems engineering and integration capabilities, enhanced by Coherent's 20-plus-year record of accomplishment in laser radar and directed energy technologies, enables superior value and accelerated capabilities to customers, particularly in the areas of special programs and missile defense initiatives.

Nuvonyx Forms European Subsidiary

Nuvonyx Inc., Bridgeton, Mo., recently announced the acquisition of Thales Laser Diode (TLD), Paris, France. TLD was a laser division of Thales and has been providing laser diodes to the marketplace for over 15 years.

"We are pleased to welcome TLD to the Nuvonyx family," commented president and CEO of Nuvonyx Mark Zediker. "This acquisition will allow us to expand our product line to now offer both actively and passively cooled, CW and QCW laser diode devices. This acquisition also provides Nuvonyx an immediate strategic presence in the European market, which is a critical link in our diode component and industrial laser system future growth strategy."

As part of the acquisition strategy, Nuvonyx will change TLD's name to Nuvonyx Europe SA. Nuvonyx designs and manufacturers high power direct diode laser components, subsystems and sources engineered for use in aerospace, defense, industrial manufacturing and research applications.

ASC Z136 Update

The reaccreditation of Accredited Standards Committee (ASC) Z136 under revised operating procedures for documenting consensus on proposed American National Standards was approved by the American National Standards Institute (ANSI) effective Oct. 4, 2005. This reaccreditation is contingent on changes proposed to the revision of ASC Z136 Procedures, which were provided at ANSI's request for further clarity of ASC Z136's balloting process.

In matters of an administrative nature to ASC Z136, the main committee functions as the consensus body. It is responsible for approval (or disapproval) of confirmation of officers and chairs, subcommittee formation or structure changes, new committee membership, adoption of ASC procedures, approval of new projects or withdrawal of an existing standard.

For balloting on draft standards, balloting groups are established (all voting members of the consensus body are invited to join a balloting group for each draft standard immediately prior to the draft ballot). By establishing a balloting group specific to a proposed standard, members can choose to participate based on their interest, expertise and commitment to a particular subject. This allows for a more thorough, discerning review process with a higher ratio of returned ballots.

For more information on ASC Z136 membership or procedures, please contact Barbara Sams at the Laser Institute of America, 407-380-1553 or email bsams@laserinstitute.org.

Member Innovations

Coherent's Introductions

The FieldMaxII™ is a next-generation laser meter from Coherent, Inc., Santa Clara, Calif. Replacing the original FieldMax, the FieldMaxII provides a new PC host interface, LabView drivers, ActiveX component, analog output, and expanded pyroelectric sensor capabilities. FieldMaxII is available in either power-only, energy-only, or both power and energy configurations. The value of FieldMaxII is strengthened by Coherent's broad range of thermopile, pyroelectric, and semiconductor sensors. Together, these enable FieldMaxII to measure UV, visible, and IR laser output from the nanowatt to the kilowatt range, and to work with CW and pulsed lasers with repetition rates of up to 300Hz.

Coherent has also expanded its comprehensive family of ultrafast laser products by introducing the Legend HE Cryo, a high-power titanium:sapphire (Ti:S) amplifier that delivers up to 7mJ/pulse with a pulse duration of less than 50 femtoseconds. This pulse energy is more than double that of earlier Legend amplifiers. The Legend HE Cryo also sets new standards in terms of average power (up to 25 Watts) and peak power (over 100 GW). Yet the beam quality (M^2<1.5), noise levels and pulse-to-pulse stability (±1%) are similar to amplifiers with much lower power ratings. The new amplifier can be operated at pulse repetition rates up to 7kHz. For more information on these products, visit www.Coherent.com.

JK Family Increased

GSI Group, Novi, Mich. and Rugby, England, has introduced a new range of compact, mid-power industrial lasers to its JK family of pulsed, Nd:YAG laser products. Combining higher peak powers with shorter pulse lengths, the JK-300HP, JK300P and JK125P lasers are designed for high precision welding and fine-cutting applications across many different industrial markets. The JK-HP range features twin-lamp oscillator design for enhanced peak power and pulse rates. The JK-P series, ranging from 125 to 300W average power, has single-lamp design. For more information, visit www.gsig.com.

First Visible Light Pulsed Nd:YAG

Miyachi Unitek, Monrovia, Calif., has released a breakthrough in laser welding technology – the model LW2AG – the world's first visible light pulsed Nd:YAG welding laser designed specifically for applications comprising highly reflective materials. LW2AG's 532nm output wavelength is optimal for precision welding gold, copper and copper alloys, non-contact, zero ESD/EMI circuit bonding for microelectronics and sensors, and replacing solder in mission-critical applications. It features real-time optical power feedback control system, a simple user interface, and fiber optic delivery for easy operation and maintenance. For more information visit www.miyachiunitek.com.

New From Ophir

Ophir Optronics, Wilmington, Mass., announced that the PD300-3W photodiode power meter has now been upgraded with a high power density filter so the head can measure up to 3W at most wavelengths and up to 150W/cm2 without saturation or damage. The PD300-3W is recommended for low-power CW and pulsed lasers.

Ophir has also introduced the PE9-F pyroelectric detector designed for the measurement of high rep rate lasers with pulse rates up to 20kHz. It can measure up to a maximum pulse width of 0.5us. For more information on either, visit www.ophiropt.com.

New 488-nm Solid-State Laser

Melles Griot, Carlsbad, Calif., has introduced a new solid-state laser platform based on the company's Kyma™ technology. Solid-state lasers built with Kyma (Greek for wave) technology require fewer individual parts than those associated with conventional diode-pumped solid-state lasers, thereby increasing output stability and performance, potentially increasing operating life, and significantly decreasing manufacturing (and end-user) cost. The technology supports laser output wavelengths from the deep blue to the red. The first product in the series, the Kyma 488, is available with 10 and 20mW of output power at 488.0nm, a critical wavelength for many biomedical and life science applications. The output beam is nearly circular (less than 1.1:1 aspect ratio), linearly polarized, and has an M2 factor of less than 1.2. The compact, conduction-cooled laser head incorporates thermoelectric cooling and automatic power control for stable, long-term operation and excellent beam-pointing stability. For more information, visit www.mellesgriot.com.

Journal of Laser Applications® Update

The *Journal of Laser Applications*® offers the latest refereed papers by leading researchers in the laser community. The upcoming November 2005 issue includes papers from materials processing. Look for the online version at www.laserinstitute. org/publications/jla/. To view the journal online, please make sure your membership is current.

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.

LIA Announces

LIA Regional Meeting

LIA is hosting a Regional Meeting on Dec. 15, 2005 at the Inn at St. John's in Plymouth, Mich. to facilitate networking amongst laser professionals and to establish a local chapter in the Detroit area. In today's globally competitive environment for higher productivity and quality (doing more with less), professionals can stay "plugged in" to current technology, applications and new developments in the laser community through the LIA. Guest speaker Randy Paura's keynote presentation at this meeting is "Blueprinting for Success: Harnessing the Power of Light."

The meeting is free for all LIA members, but you must register. The nonmember price is $10. To register, contact LIA at 1-800-34-LASER/407-380-1553 or register online at www.laserinstitute.org (LIA Regional Meeting, Plymouth, Mich.).

Early Bird Prices for Courses

Starting in January 2006, LIA will be offering early bird pricing for its laser safety officer (LSO) and medical laser safety officer (MLSO) courses. For the LSO course, the early bird price will be $1,295 for nonmembers and $1,250 for members who register up to four weeks prior to the course. After that the price changes to $1,595 for nonmembers or $1,495 for members. For the MLSO course, the early bird price is $745 for nonmembers or $645 for members up to four weeks prior to the course. After the deadline the price increases to $895 for nonmembers or $795 for members. For online registration, the early bird price will automatically be calculated. Please contact LIA if you have any questions at 800-34-LASER.

Laser Dentistry Conference

The Academy of Laser Dentistry will be hosting Source 2006: Lasers in Dentistry, the academy's annual conference and exhibition, on Mar. 15-18 in Tucson, Ariz. This is one of the most comprehensive dental conferences in the world that concentrates on scientific research and clinical uses of lasers in dentistry. For more information visit www.laserdentistry.org.

PICALO Advance Program

The Advance Program for LIA's newest conference, the Pacific International Conference on Applications of Lasers and Optics (PICALO), will be available in January. PICALO, which will be held Apr. 3-5 in Melbourne, Australia, will focus on the growth and application of lasers and optics in the Pacific region. For more information, visit www.laserinstitute.org/ conferences or contact Beth Cohen at 800-34-LASER/407-380-1553 or bcohen@laserinstitute.org.

Engineers Week 2006

Engineers Week, a consortium of more than 100 professional and technical societies and major U.S. corporations, is slated for Feb. 19-25, 2006. This year's program will extensively reach out to middle school teachers so educators can interact directly with engineers and prepare students for courses to come. For complete information on the programs and events for Engineers Week, visit www.eweek.org.

Additionally, the 2006 National Engineers Week Future City Competition™ – an educational program that asks teams comprised of students with mentor teachers and engineers to design and build a future city – will be held in January at the regional level with the finals to be held Feb. 20-22 in Washington, D.C. during Engineers Week. For more information visit www.futurecity.org.

Save the Date

The 25th International Congress on Applications of Lasers & Electro-Optics (ICALEO®) will be held Oct. 30-Nov. 2, 2006 at the DoubleTree Paradise Valley Resort in Scottsdale, Ariz. A Call for Papers will be announced in January 2006. For more information, contact Conference Director Beth Cohen at bcohen@laserinstitute.org or visit www.icaleo.org.

Happy Holidays from the LIA!

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