LIA TODAY

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LIA
THE LASER INSTITUTE

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ASSOCIATION OF INDUSTRIAL LASER USERS 25TH ANNIVERSARY

By Steven Glover

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Now a requirement under the updated ANSI Z136 Standards, a Medical Laser Safety Officer (MLSO) or Surgical Director must be present to review healthcare laser system (HCLS) disposables and accessories. Learn more about this process and how it reduces risks.

LIA TODAY

THE OFFICIAL NEWSLETTER OF LIA

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FEATURES

BLS NEWSLETTER

ADVERTISERS

LIA Laser Safety Trainings

LASER SAFETY OFFICER TRAINING	
Orlando, FL	Jan. 22 - 24, 2020
Orlando, FL	May 27 - 29, 2020
Orlando, FL	Aug. 19 - 21, 2020
Orlando, FL	Dec. 2 - 4, 2020
LASER SAFETY OFFICER WITH HAZARD ANALYSIS	
Orlando, FL	Jan. 27 - 31, 2020
Orlando, FL	Jun. 1 - 5, 2020
Orlando, FL	Aug. 24 - 28, 2020
Orlando, FL	Dec. 7 - 11, 2020
MEDICAL LASER SAFETY OFFICER TRAINING	
Orlando, FL	Jan. 25 - 26, 2020
Orlando, FL	May 30 - 31, 2020
Orlando, FL	Aug. 22 - 23, 2020
Orlando, FL	Dec. 5 - 6, 2020

Visit www.lia.org for all course and event listings

Course Highlight

LASER SAFETY OFFICER FOR RESEARCH & DEVELOPMENT TRAINING

WEST POINT, NY
SUN, 03/08/2020 TO MON, 03/09/2020

This course is about providing the individual appointed as Laser Safety Officer with reasonable and adequate guidance for identifying laser hazards and implementing control measures for these hazards. The course is based on the American National Standard for Safe Use of Lasers in Research, Development, or Testing.

This course is tailored for individuals newly appointed as Laser Safety Officers and placed in charge of laser safety at corporate research laboratories, universities and colleges that are using lasers in graduate-level programs in physics, chemistry and electro-optics laboratories, as well as Department of Energy research laboratories. In addition, current Laser Safety Officers at R & D laboratories and testing labs who would like a review or refresher course are encouraged to attend.

This course will be held at the Directed Energy Professional Society's - Annual Directed Energy Science and Technology Symposium

Gilbert Haas
LIA President 2020

PRESIDENT'S MESSAGE

I am honored to serve as the new LIA President for 2020. Having served for many years on the LIA Board of Directors and on the Executive Committee, I have been involved in the recent restructuring and transitioning. With the future holding many unknowns regarding the COVID-19 Virus, Presidential election and possible economic corrections, the LIA is now better positioned for the future and any challenges that come with it.

Being in the industrial laser sector for 37 years and the founder/owner of Haas Laser Technologies, Inc. for the past 28 years, I plan to bring my business experience into the LIA operations. All of the programs will be looked at with ROI's in mind which will be reinvested into the organization to provide stability and additional membership benefits to grow the organization.

Together we will work toward our mission to foster lasers, laser applications, and laser safety worldwide. Everything, from increasing individual and corporate membership, conference value to participants, and evolving publications and training to match the needs of members, will be reviewed.

Finally, I look forward to a productive New Year and our continued association and structuring/positioning of our organization for the future.

Nat Quick
Executive Director

EXECUTIVE DIRECTOR'S MESSAGE

In this first issue of 2020, we congratulate the Association of Industrial Laser Users (AILU) as they celebrate their 25th anniversary this year. We thank Dave MacLellan, Executive Director of AILU, for spending a few moments with us for an interview. In recognition of Black History Month (February), we are celebrating Dr. Marshall Jones, the LIA 2007 Arthur L. Schawlow Award recipient, with a very inspiring article on his technical and social contributions to society. Finally, a generally informative article highlights the use of lasers in veterinary medicine, which continues to be a topic of rising interest.

From the new Board of Laser Safety (BLS) Newsletter, we present a laser safety-related article addressing procedures for reducing facility risk of laser system disposables and accessories entering the operating room and the requirement for Medical Laser Safety Officer participation. Articles written for this newsletter are written and submitted by BLS Certified Laser Safety Officers and Certified Medical Laser Safety Officers sharing their knowledge and experiences in the industry.

As an update, during the last few months, we have been focused on restructuring our conference planning procedures. We have secured venues for ICALEO 2021 and ICALEO 2022. This enables a three-year conference-planning model discussed in the November/December 2019 message. We have been able to share information sooner allowing prospective attendees more time for planning travel and other preparations to attend the conference. The call for abstracts/papers and posters has been released for ICALEO 2020 and registration is open. In addition, several exhibitors and sponsors have been signed.

Another of our conferences, the Industrial Laser Conference (ILC), which is embedded in the International Manufacturing and Technology Show (IMTS), is scheduled for September 16, 2020, at the McCormick Center in Chicago. Dr. Abdulla Nassar, Penn State Applied Research Laboratory, is the General Chair and the general theme is laser additive manufacturing. Please direct inquiries to Steven Glover (sglover@lia.org).

Venues for the International Laser Safety Conference (ILSC) 2021 are also being evaluated well in advance of the event date. Results from a recent survey have identified three top locations where properties are being evaluated.

As we continue, I look forward to seeing what this year holds for us.

Find LIA at these Laser Conferences in 2020!

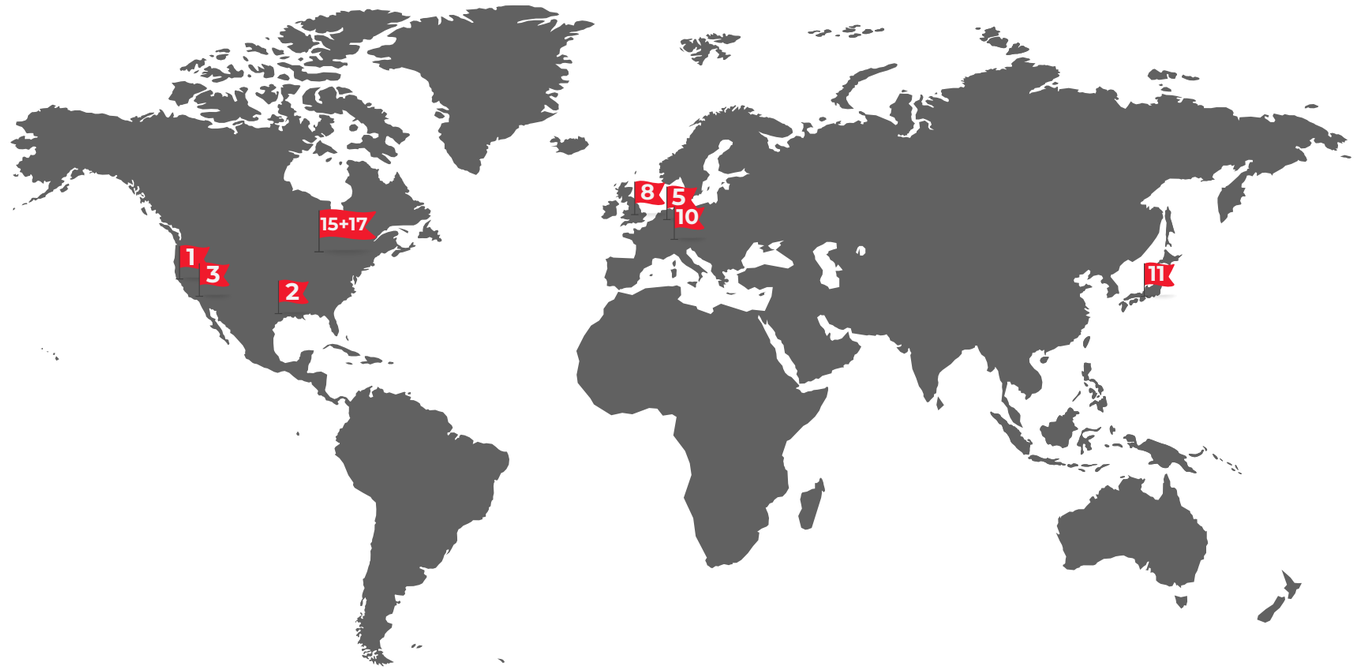
Laser Industry Conferences Around the World - 2020

1. SPIE BiOS/Photonics West, Feb. 1-6*
2. DOE LSO Workshop, March 31-April 2*
3. RAPID + TCT, April 21-23*
4. SPIE Defense + Commercial Sensing, April 26-30
5. AKL, May 6-8*
6. CLEO, May 10-15
7. Optatec, May 12-14
8. ILAS 2020 & AILU's 25th ANNIVERSARY, May 20-24*
9. Photonics North, May 26-28
10. LASYS, June 16-18*
11. LAMP, June 22-23, 2020*
12. SPIE Optics + Photonics, Aug. 23-27
13. CIOE, Sept. 9-11
14. OSA Frontiers in Optics + Laser Science APS/DLS, Sept. 13-17
15. IMTS, Sept. 14-19*

LIA's ILC Conference is scheduled for Wednesday, 9/16, in room W-190B

16. SPIE.Photonex, Oct. 7-8
17. **ICALEO, Oct. 19-22***
18. FABTECH, Nov. 18-20

*Conference LIA is Attending

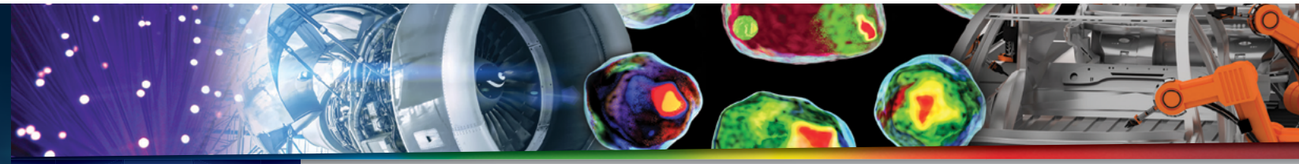


ICALEO®
39th INTERNATIONAL CONGRESS ON APPLICATIONS OF LASERS & ELECTRO-OPTICS

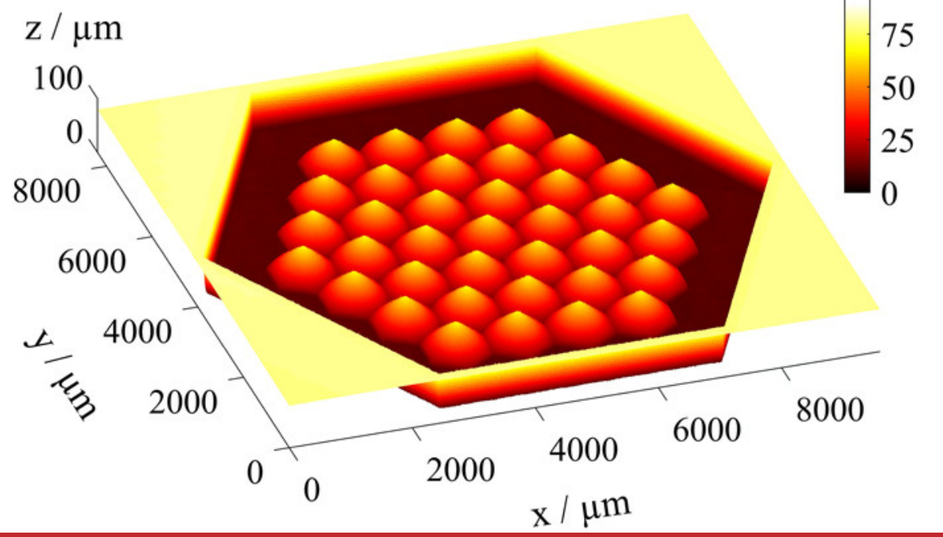
Join us for our 2020 ICALEO® conference!

The World's Premier Platform for Breakthrough Laser Solutions, the International Congress on Applications of Lasers & Electro-Optics, brings together the leaders and experts in the field of laser material interaction, providing the world's premier platform for sharing new ideas and discovering solutions.

See you in Chicago!



JLA | **EDITOR'S PICK**



Laser scanning microscope image of contour of the axicon array preform after the femtosecond laser ablation

RAPID FABRICATION OF PRECISE GLASS AXICON ARRAYS BY AN ALL LASER-BASED MANUFACTURING TECHNOLOGY

By: Simon Schwarz, Stefan Rung, Cemal Esen, and Ralf Hellmann

Abstract: The authors report on the rapid fabrication of an axicon array, consisting of 37 individual axicons in a hexagonal arrangement, made of fused silica by an all laser-based manufacturing method within only 23 min. Therefore, a two-step process is used, first to ablate the silica substrate in a layer-by-layer process, generating the predefined geometry of the axicon array with a femtosecond laser, and second to polish the rough optical element by applying a CO2 laser to reach smooth surfaces. Here, the roughness is reduced from 0.36 µm before to 48 nm after the polishing step, thus reaching optical quality. The finalized axicon array was placed into a femtosecond laser machine for a detailed evaluation of the resulting quasi-Bessel beams. It is found that all sub-beams exhibit the typical zeroth-order Bessel beam intensity distribution, in turn confirming that the manufacturing process used here is well suitable for the fabrication of complex optical geometries. Cross sections of the sub-beams in both x- and y-directions show an almost identical intensity profile, indicating the high contour accuracy of the axicon array. The diameter of the quasi-Bessel beams is measured to be in the range of 9.4–10.3 µm [full width at half-maximum (FWHM)], and the Bessel range in propagation direction amounts to between 8.0 mm and 8.5 mm (FWHM).

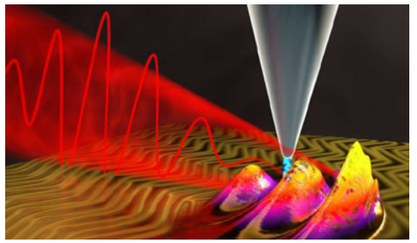
Journal of Laser Applications 32, 012001 (2020); https://doi.org/10.2351/1.5134988

Free to LIA Members!
Visit JLA Online: https://lia.scitation.org/journal/jla

JLA Journal of Laser Applications

TRENDING IN THE NEWS:
LIA'S TOP 4 ARTICLE PICKS

1

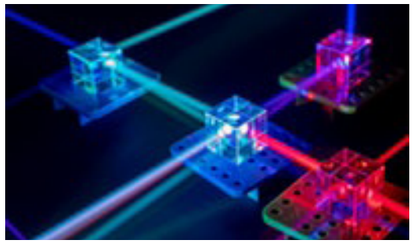


AN ULTRAFAST MICROSCOPE FOR THE QUANTUM WORLD

Physicists from Stuttgart used ultrashort laser pulses in conjunction with a scanning tunnelling microscope to measure exactly where electrons are at a specific time down to the individual atom and to an accuracy of a few hundred attoseconds.

Read more

2

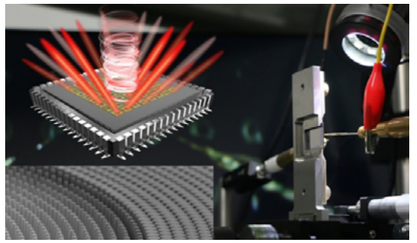


PHOTONIC COMPUTERS COULD SOLVE A CLASSIC PROBLEM THAT STUMPS YOUR LAPTOP — STUDY

Researchers injected a laser into etched pathways on a glass processing unit in order to solve a complex math problem that classical computers struggle with.

Read more

3



METASURFACES HELP SHAPE LASER BEAMS

A team of researchers in France and China has now augmented the capabilities of Vertical-cavity surface-emitting lasers (VCSEL) by integrating a nano-patterned beam-shaping structure into each laser during wafer-scale processing.

Read more

4

PORTABLE CONCUSSION DETECTOR SENDS LASER PULSES THROUGH THE FOREHEAD

Scientists at the University of Michigan use non-invasive infrared lasers in their new portable device to measure the well-being of brain cells.

Read more

Figure 1:
Delegates networking over lunch at ILAS 2019

Association of Industrial Laser Users 25th Anniversary

Interview By:
Steven Glover, The Laser Institute

This year the Association of Industrial Laser Users (AILU) celebrates its 25th anniversary. We took a few moments to talk with Dave MacLellan, Executive Director of AILU.

Dave, thank you for taking the time to answer some of our questions. Can you tell us about your role at AILU?

My role as Executive Director is to manage the finances and overall functioning of the Association. Working with the President, Vice-President and a Steering Committee of around 14 people, we organise the workshops, run conferences, produce the publications and help our members connect with the buyers and suppliers they need to grow their business.

How long have you been with AILU?

I have been "on staff" for 5 years now, though I have worked for AILU member companies since the start of AILU. That means I saw AILU from the outside and contributed to the magazine and presented at workshops since the early days.

AILU will be celebrating their 25th anniversary this year. Can you tell us what AILU has planned for this significant milestone?

We would like to look back over the history and we are interviewing past AILU Presidents for some impressions about what AILU meant to them.

Isn't ILAS normally every two years?

Yes. ILAS started in 2009 as a 2-day event held at TWI near Cambridge with 32 speakers. To organise the Symposium took a lot of effort and it was decided to run it every 2 years which allowed it to grow exponentially and become widely recognised. When I took over in 2015 we had just had an ILAS with 200 delegates and 90 presenters, then in 2016 we focused on one-day workshops as usual. We had the opportunity to run a one-off Laser Precision Microfabrication LPM symposium in a non-ILAS year (2018) which was a 4-day event with far more presenters and delegates, so that made us think that perhaps we were able to do more than we gave ourselves credit for. So the opportunity of celebrating our 25 years with a special ILAS seemed like a great idea.

LIA plans to attend and we are looking forward to it. Who are some of the participants we can expect to see at ILAS this year?

We have invited speakers from around the world, many of whom you will know, including Silke Pfleuger (attending her first ILAS) and Dirk Petring from Fraunhofer ILT. We are also delighted to welcome Professor Furumoto from Kanazawa University in Japan to ILAS for the first time. As with every ILAS it is almost exactly a 50:50 ratio of academic to industrial presenters. We are putting the final touches to the programme as we speak, so look at the website for the latest news.

Can you name some of the accomplishments AILU has had over the last 25 years that you are particularly proud of?

I think the magazine, The Laser User, is a benchmark for news and information – I hear a lot of positive feedback which means it is being read by many. ILAS would be another key accomplishment and the brand continues to advance. Our Job Shop committee is a self-sustaining group of laser subcontract business owners who are genuinely much more collaborative than competitive and hold an annual event for that sector. Finally, I am pleased that we have an Early Careers Researchers group of men and women in their 20s and 30s who I hope will be the next generation of leaders in the laser industry and take AILU forwards into the future.

Figure 3:
Recent edition of The Laser User – house magazine of AILU

Figure 2:
AILU Job Shop Annual business meeting 2019 at Mini Plant Oxford

What do you see as the future for AILU?

I can see AILU embracing a wider variety of members, pushing the diversity of our demographic to reflect the industry – and pushing the industry to recruit and promote in a more diverse manner. Price reductions are bringing laser processing within the reach of home users and enthusiasts, and AILU is looking at how we can serve this huge pool of actual and potential laser users.

> "Handing over the baton to the next generation of industry and academic leaders, I would see the Association benefiting from the changing technology and the tools of the future."

Handing over the baton to the next generation of industry and academic leaders, I would see the Association benefiting from the changing technology and the tools of the future which are hard to predict (in the same way as smart phones and the internet have transformed business in the last 25 years). Also, our past presidents have pushed us to connect better internationally with sister organisations (like LIA and JLPS) – and the laser industry can be stronger globally if we co-operate well with each other.

Dave as always it has been a pleasure to speak with you. Thank you for your time and congratulations to AILU on 25 years!

ILAS Event Info: ilas2020.co.uk

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MEMBERS

Thank you for being a valued LIA Member! If you need Laser Safety Awareness training, now is the perfect time to sign up. All through February and March, our new 2020 revision of the Laser Safety Awareness course will be available to you for just $50. All you have to do is log in and use the code below at checkout!

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$50
for LIA Members

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Valid until Tuesday, March 31, 2020

Laser Safety Awareness Training - NEW 2020 Revision!

If you're a laser safety officer who must train his or her staff, this is the course for your staff to take — without having to bring in an outside expert or send personnel to a course and losing valuable productivity. This short two-hour training session will cover the safety basics for those operating or working near laser systems. Your staff will learn basic physics, biological effects, beam hazards, non-beam hazards, and control measures for safe laser environments.

This course is offered online - with LIA's online education programs, you can gain comprehensive, applicable training quickly and easily from the comfort of your office or home. The convenient, easy-to-access delivery method over the Internet saves on travel cost and makes it easier for all laser professionals to fit into their busy schedules.

SIGN UP!

For questions or information on becoming a member, please visit *www.lia.org/membership* or email *membership@lia.org*.

U.S. Department of Labor Publishes Amendments and Technical Corrections to OSHA Standards

WASHINGTON, DC – The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) recently published technical corrections and amendments to 27 OSHA standards and regulations. This administrative rulemaking corrects minor misprints, omissions, outdated references, and tabular and graphic inaccuracies. The revisions apply to several industry sectors, including general industry, construction, shipyard employment and longshoring. Some revisions may reduce employer costs, and none expand employer obligations or impose new costs.

Under the Occupational Safety and Health Act of 1970, employers are responsible for providing safe and healthful workplaces for their employees. OSHA's role is to help ensure these conditions for America's working men and women by setting and enforcing standards, and providing training, education and assistance. For more information, visit www.osha.gov.

The mission of the Department of Labor is to foster, promote, and develop the welfare of the wage earners, job seekers, and retirees of the United States; improve working conditions; advance opportunities for profitable employment; and assure work-related benefits and rights.

Original Release: February 14, 2020

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B L A C K HISTORY MONTH

FEBRUARY 2020

In honor of February being Black History Month, we are recognizing one of the true pioneers of the laser industry and highlighting his contributions and accomplishments.

Dr. Marshall Gordon Jones

Dr. Marshall Gordon Jones was born August 1, 1941 to Mildred and Dallas Jones. During the early years of his life, Marshall's father was enlisted in the United State Navy as a participant in World War II. Consequently, Marshall, his mother, and his younger brother, Melvin lived with his Uncle Lawrence and Aunt Mary on their duck farm in Aquebogue, New York. Aquebogue was a meager income, rural farming community with a population size of approximately nine hundred.

Later, as Dr Jones would recall his childhood, he would note that it was unusual for him to hear of or experience prejudice or discrimination. As a result, for much of his youth he was largely unaware of the prejudice and discrimination that many black people faced across the nation even though the school district he attended was comprised primarily of Caucasians (roughly eighty percent). In fact, it was while he attended grade school in the Aquebogue school district that Dr. Jones discovered that he had the ability to excel in Math and Science.

Dr. Jones' would not, however, be able to remain insulated against racial prejudice. Three acts of discrimination would leave memorable impressions with Dr. Jones for the duration of his life. One would occur on the night of his high school graduation when Dr. Jones and his brother would leave with a white friend, Billy, to attend their friends graduation party in the neighboring town of Mattituck. However, after the three arrived, the manager of the club demanded that Marshall and his brother leave immediately because of their race. Billy, not accepting the exclusion of his friends, launched into an argument with the club's manager that nearly resulted in a fight. Consequently, Billy would choose to leave his own party with Dr. Jones and his brother in tow.

> *"[H]e was one of two hundred African American in a school of twenty thousand, and the only black student in the Engineering School."*

The two other experiences would happen shortly after his high school graduation. One occurred while he was enrolled at Mohawk Valley Community College in Utica, New York when the homeowner of the student housing home that was assigned to him refused to allow him to live there because of his race. And, the other occured on a bus ride down South after he was selected to be a New York State delegate at the Circle K national convention in Florida during August of 1961. When the group of delegates reached the Colonial Inn, Marshall realized that he was the only black delegate at the entire conference. Furthermore, the hotel manager denied letting him stay at the hotel because he was black. In retaliation, the entire Northeast bloc threatened to leave the hotel if Marshall was not permitted to stay. Ultimately, Dr. Jones was granted permission to stay at the hotel, but he had to do so without officially registering and under the condition that he would not utilize the hotel's beach property.

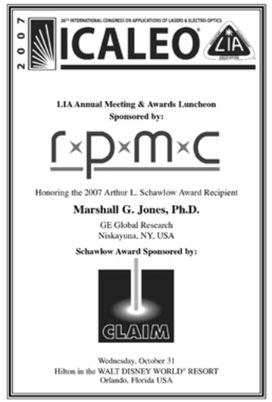
These experiences did not, however, deter Dr. Jones from continuing to vehemently pursue his education in Math and Science. He went on to receive an A.A.S. degree in 1962 from MVCC after two years of study, and in 1965 graduated from the University of Michigan with a degree in Mechanical Engineering where he was one of two hundred African American in a school of twenty thousand, and the only black student in the Engineering School. Following college graduation, he continued on to receive his Masters degree and PhD from the University of Massachusetts at Amherst in 1972, and 1974 respectively. Afterwards he gained employment

> *"In 2017 he was inducted into the National Inventors Hall of Fame for his work and dedication to lasers"*

at General Electric's research and development sector in Schenectady, New York. Once Dr. Jones entered the workforce, his advanced education and scientific expertise preceded his race; so that, during his time at GE, the greatest challenge that he says he face in the workforce was getting people to understand and accept his creative ideas. This, he believes, is a common problem within the scientific research sector.

Dr. Jones has received ample recognition for his contributions as an engineer. In 1994, he received the Black Engineer of the Year award and, in 1999, was named Pioneer of the Year. Furthermore, in 2002, he was elected to the National Academy of Engineering, which he cited as one of his greatest accomplishments. He was the chair of the peer committee in charge of electing the new members for 2005 and is also a member of the National Science Foundation, and the American Society of Mechanical Engineers

Dr. Jones was the recipient of LIA's 2007 Arthur L. Schawlow Award. In 2017 he was inducted into the National Inventors Hall of Fame for his work and dedication to lasers, joining names such as Thomas Edison, Henry Ford, Arthur Schawlow, and Theodore Maiman.



ICALEO's 2007 Awards Banquet Program announcing Dr. Jones winning the Schawlow Award

Lasers in Veterinary Medicine - An Introduction

by
Ronilee Henderson and Jana Langhans

This article gives a broad look into how lasers have been integrated into the veterinary field. There are many benefits and uses for lasers in these medical practices, just as there are in human medical care.

As most of us know, lasers are very versatile and have a wide variety of industries that they can be effective in. In fact, technology has evolved so much over the past 60 years that for some jobs, lasers are crucial to get the desired results. Our everyday life has been shaped by the many roles that lasers play such as barcode scanners, DVD players, and printers. They even play a large role in the creation of cell phones.

One area in the laser industry that has made large strides in their technology is the medical field. There are many different areas of the medical field and a variety of them have already seen improvement in practices due to incorporating laser technology. Things like LASIK, a laser surgery to improve eyesight, is a very common procedure that has been around for about 20 years and it seems that everyone has heard about it and many people have had it done. Laser usage has continued to increase in many medical practices from surgical rooms to the dentist chair. However, one area has been overlooked until recently, which is veterinary work.

Veterinary practices use lasers in a very similar way to human medical practices, but that does not discount their practicality for animals or even uniqueness in certain situations. There are many reasons why the relevance of lasers when working with animals is rising.

A major function of laser technology in the medical field for animals is to reduce pain. Laser therapy has become a big hit for dogs, but other animals can benefit too. For example, lasers were used to help treat burns on koalas after the large forest fires in Australia. Applications that are already becoming more typical in veterinarian offices include:

- accelerated wound healing,
- reduction of inflammation,
- musculoskeletal pain reduction,
- and treatment for ear infections,
- gingivitis,
- hip dysplasia,
- and many other ailments.

While most treatments using lasers in veterinary medicine are directly related to reducing pain, more surgical uses can also be expected, especially as adoption of laser technology becomes more commonplace. Some surgical treatments that are already occurring include:

- ablation of the prostate,
- removal of dermal tumors,
- ovariohysterectomy and castration,
- and some mouth and throat procedures.

The main procedures that the majority of owners have done to their pets are ovariohysterectomy and castration, commonly known as spaying and neutering. This also involves using lasers and among being one of the most common procedures, it is also one of the easiest ones to be performed.

However, no matter what the surgery, there are many benefits to having them done with a laser. One of the main assets of using a laser for surgery is the added precision. Instead of using a scalpel, doctors are able to use lasers and control elements like the laser's wavelengths and other factors that can increase precision and accuracy. Lasers also reduce the risk of surgical infection due to them destroying bacteria at the site of the incision. In a similar way, the laser cauterizes the wound, preventing blood loss and can also enclose the nerve endings, decreasing post-operative pain.

Although treating animals may have differences to treating humans, a number of practices are the same or similar. Many of the applications that are currently in use for animals were originally developed for treatment of people. This means that even if lasers have not been researched much for use specifically for veterinary practices, the strides that have been made in human medicine may be able to be applied to animals, giving them the same technological advance and benefits. As advancements continue, we should see these applications continue to find their way into veterinarian practices.

This article is meant to be generally informative but does not go into much detail. If you have any insights into the veterinarian uses of lasers, we would be interested in hearing from you! Please email marketing@lia.org for any questions or find our submission guidelines at https://www.lia.org/subscriptions/lia-today.

MEET THE 2020 BOARD OF DIRECTORS

2020 Officers

LIA's 2020 President: Gilbert Haas has worked with industrial lasers for the past 36 years. His education consists of a BS degree in Electrical Engineering from the University of Wisconsin and an AS degree in Laser Technology from North Central Technical College. He also has advanced his formal education by completing several additional classes in the fields of Mechanical Engineering and Metallurgy. Throughout his career, Mr. Haas has taught classes, given many lectures, published numerous papers and holds several national and international patents in the field of industrial laser applications.

Throughout his career with lasers, Mr. Haas always saw a need for new and innovative laser beam delivery technology. So in 1992, Mr. Haas founded Haas Laser Technologies, Inc. Today, Haas Laser Technologies, Inc. designs and manufactures custom laser beam delivery components, laser beam measurement equipment and laser systems for industrial applications at its facilities in Flanders, New Jersey.

Mr. Haas served on the LIA Board of Directors in 2015 and 2016 and as treasurer of the Executive Committee in 2017 and 2018.

President-Elect: Henrikki Pantsar is Director of Applications and Services at Trumpf, Inc., Laser Technology Center in Plymouth, MI. In this position, he is responsible for micro, macro, marking, and additive manufacturing applications, as well as after-sales operations, including technical services and spare parts. Previously, he held the positions of Chief Technology Officer and Vice President of Research and Development at Cencorp Corporation/Valoe Corporation. He has also worked in the field of laser applications at Fraunhofer USA, VTT Technical Research Centre of Finland, and Lappeenranta University of Technology. Dr. Pantsar received his Doctor of Science in Technology degree from Lappeenranta University of Technology, and he also received the Henry Granjon Prize of International Institute of Welding for his work in laser-hardening research.

Past-President: Minlin Zhong has been involved with lasers and manufacturing technologies professionally for 34 years and is recognized nationally and internationally as the leading Australian researcher in the field. Prof. Brandt is a professor in Advanced Manufacturing in the School of Engineering, as well as the Technical Director of the Advanced Manufacturing Precinct, and the Director of RMIT Centre for Additive Manufacturing at RMIT University in Melbourne, Australia. He is the recipient of numerous awards and is the author of more than 200 publications, five book chapters, and a book on laser additive manufacturing.

Prof. Brandt has had a 30-year association with LIA, including his involvement on the organizing committees for ICALEO and LAM for many years, as well as serving on the LIA Board of Directors. Prof. Brandt was the organizer and General Chair for PICALO 2004 and PICALO 2006, which promoted industrial lasers and applications in the region. He is also the Senior Editor of JLA in additive manufacturing.

Secretary: Islam Salama is a Senior Director in the Technology Manufacturing group at Intel Corporation. In this capacity, Dr Salama manages a global team of scientists, engineers, legal, finance and business professionals responsible for technology development, high volume manufacturing and business operation of the high-density interconnect substrate and microelectronics packaging across all intel products. He has a PhD. in laser materials processing from the College of Optics and Photonics (CREOL) at the University of Central Florida. He worked in the field of semiconductor manufacturing and microelectronic packaging focusing on the development of various lasers and patterning processes for high density interconnect and microelectronic substrates. He has authored over 30 technical papers, was awarded more than 80 international patents and has more than 30 patent-pending inventions in the fields of laser technology, laser materials processing, semiconductor fabrications and microelectronics packaging and devices. He had been an invited speaker and lecturer in various international conferences and academic institutions. Dr Salama has been involved in the filed of laser materials processing and laser applications over the last 20 years and has been an active member of the LIA since 2001.

Treasurer: Aravinda Kar is a professor of Optics and leads the Laser-Assisted Manufacturing and Materials Processing (LAMMP) laboratory in CREOL, The College of Optics and Photonics at the University of Central Florida. He has been working on various aspects of laser materials processing and manufacturing for more than 30 years, and published 119 technical journal papers, 183 conference papers and received 29 patents. He is a Fellow of the Laser Institute of America and a Fellow of the National Academy of Inventors. He has co-authored a book entitled, Theory and Application of Laser Chemical Vapor Deposition, Plenum Press, New York, 1995.

2020-2022 Board of Directors

Neil Ball is the president of Directed Light Inc, of San Jose, California. Directed Light Inc is a laser technology company serving the industrial, medical and scientific laser communities worldwide since 1983. Neil has devoted his adult working life to the industrial laser industry. He began his career in 1985 as an application technician in the contract manufacturing sector at LaserFab, Inc. in California. After developing his laser knowledge he moved to Systron Donner Inertial and became involved in the production of inertial guidance packages, accelerometer, gyroscopes and inclinometers. Neil joined Directed Light Inc in 1993 to assist in applications development, system design, and component/service support. In 2005 he became President of Directed Light Inc. He is still active in systems and applications development. Neil has led the marketing and developing sales plans for both national and international arenas and is the resident methodologist, working on projection of future industry trends.

Neil is a Fellow and sits on the Board of Directors for The Laser Institute of America. In addition he is a member and Educational Council Director for the Industrial Laser Community of the Society of Manufacturing Engineers. In addition he holds memberships with The American Welding Society, Fabricators and Manufactures Association, and The American Society of Lasers in Medicine and Surgery.

Milan Brandt is a professor in Advanced Manufacturing in the School of Engineering, Technical Director Advanced Manufacturing Precinct and Director RMIT Centre for Additive Manufacturing, RMIT University, Melbourne Australia. Professor Brandt has been involved with lasers and manufacturing technologies professionally for some 36 years and is recognised nationally and internationally as the leading Australian researcher in the field. He is the recipient of a number of awards and is the author of over 200 publications, 5 book chapters and a book on laser additive manufacturing. He has also commercialised the results of his research through the companies he has helped establish.

Professor Brandt is a Fellow and currently an executive member of LIA. In 2018 he was the president of LIA. He has had a 33 year association with LIA being involved on the organizing committees for ICALEO and LAM for many years, as well as serving on the LIA Board of Directors. He is also the Senior Editor of JLA in additive manufacture.

Yan (Flame) Chen is currently the general manager of Han's Laser Smart Equipment Group, the application specialist of laser industry, the founder of China's fiber laser cutting machine, the leader of the National Science and Technology Major Project research group, and the Tech Lead of Intelligent Manufacturing Integrated Standardization and New Model Application Proposed Project (Announced by the Ministry of Industry and Information Technology in 2016).

Mr. Chen, born in 1972, studied at the Department of Mechanical Engineering of Hunan University from 1993 to 1997. After graduating, he joined Han's Laser in 1998, has served successively as an engineer, manager, director, and deputy general manager, etc. He is currently the general manager of Han's Laser Smart Equipment Group, the president of Shenzhen Han's MP Laser Technology Co., Ltd., the general manager of Shenzhen Han's SMC Technology Co., Ltd., and the president of Shenyang Han's Setwin Robot Co., Ltd. In addition. Mr. Chen is also the executive director of the Chinese Optical Society and the vice chairman of Subcommittee 1 on Laser Materials Processing and Laser Equipment of the National Technical Committee 284 on Optical Radiation Safety and Laser Equipment of Standardization Administration of CHINA (TC284/SC1).

Mr. Chen actively led the transformation of traditional manufacturing to smart manufacturing, and made major breakthroughs in smart equipment applications, smart workshops, smart operation and maintenance, etc., and promoted the development of China's laser industry and even the global laser industry.

Corey Dunsky is the president and founder of Aeos Consulting, Inc., where he provides technology, market, and strategy development to high-tech laser and equipment companies. He has been developing and marketing leading-edge laser processes for over 20 years, including laser micromachining for semiconductor, microelectronics, photovoltaics and LED manufacturing, and more recently, metal additive manufacturing for aerospace, medical and dental applications. In the latter area, in 2015-16 he was Chief Technologist at Concept Laser, Inc, an early mover in laser- based metal 3D printers. Before that, he held various management and technical positions at laser and capital equipment companies including Veeco Instruments, Coherent, Inc. and Electro Scientific Industries, Inc. At Veeco, he was responsible for growing Veeco's core competence in laser processing technology and led a team developing commercial laser applications in high-growth markets. At Coherent, he managed the company's worldwide Laser Applications Group and led the company's entry into solar applications and laser-based PV equipment. At ESI, he led groups driving advanced laser-micromachining application development as well as photonic hardware development. In addition to his private-sector experience, Dunsky has held positions at NASA and Sandia National Laboratories. He earned his doctorate in Mechanical Engineering from the University of California, Berkeley.

Constantin Haefner recently joined the Fraunhofer Institute for Laser Technology (ILT) in Aachen, Germany, as the organization's executive director. ILT is one of the premier laser R&D institutions in Europe. He oversees more than 500 employees focused on activities such as the development of new laser beam sources and components and industrial laser processes. Prior, Haefner directed the Advanced Photon Technologies Program at Lawrence Livermore National Laboratory, USA, where he led the development of high-energy cutting-edge laser systems relevant to scientific research and commercial applications. Haefner and his team pushed the frontiers in developing next generation high peak-power lasers – technologies that are now starting to revolutionize the field.

Haefner received his Physics Diploma degree from the University of Constance (1999), and his Ph.D. from the University of Heidelberg, Germany (2003). In 2004 he became Research Assistant Professor and Chief Laser Scientist at the University of Nevada Reno's Nevada Terawatt Facility. In 2006 he joined LLNL where he has since led the R&D of advanced laser technologies. Haefner won several awards and was elected 2017 to Fellow of OSA for his pioneering work in development of next-generation, high-average- power petawatt laser systems and sustained advancement of state-of-the art laser technologies.

Jamie J. King, is a Certified Laser Safety Officer with over 28 years of experience in laser safety. He has served as the LSO for NASA-Ames Research Center, Sandia National Laboratories (California), and is currently the laser safety subject matter expert for Lawrence Livermore National Laboratory (LLNL), home of the National Ignition Facility. Jamie represents LLNL on the Accredited Standards Committee (ASC) Z136, is a member of the Z136 Administrative Committee and also serves on the SSC-1, SSC-8, and TSC-4 subcommittees. He is the current chair for the Department of Energy's (DOE) Energy Facility Contractor's Group (EFCOG) Laser Safety Task Group and authors the Laser Lessons Newsletter for LLNL with worldwide distribution. Jamie served as co-chair for the Technical Practical Applications Seminar at the 2017 and 2019 ILSC. He is serving as director for the 2020 DOE LSO Workshop at the University of Texas-Austin and has been on the planning committee for the previous five. Jamie is the 2019 recipient of the R. James Rockwell, Jr. Educational Achievement Award.

Robert Thomas, (PhD Physics, University of Missouri—Columbia) is currently serving as a Principal Research Physicist for the Airman Systems Directorate of AFRL. He is also the current Core Technology Competency Lead for the Bioeffects Division at Joint Base San Antonio—Fort Sam Houston, TX. His group has provided a very large percentage of foundational bioeffects data used to establish and refine exposure limits for laser safety. He is an active Fellow of the Laser Institute of America and SPIE, and regularly organizer of AFRL-supported scientific conferences in the fields of laser safety, biomedical optics, and related sciences. He has served LIA as Secretary (2012-2013) and President (2015), and as the Chairman of the Z136 Accredited Standards Committee (2010-2019).

Chrysanthos Panayiotou is the Executive Director and Principal Investigator of LASER-TEC, a National Science Foundation Center of Excellence in Laser and Fiber Optics Education. He is also a professor and chair of the Electronics Engineering Technology Department at Indian River State College, Ft. Pierce, Florida.

He worked as a design engineer in the telecommunications industry (microwave and RF) for 12 years before entering academia. He is the author of two textbooks and five laboratory manuals, and has made hundreds of presentations at educational conferences on topics related to lasers, fiber-optics and photonics in general. He leads the Optics and Photonics College Network (OPCN) which consists of 36 US Colleges with two-year programs, producing technicians for the Laser-Photonics industry. One of his high priority interests is to promote lasers and photonics education and career paths to the upcoming generations. He is a Fulbright Scholar and member of LIA, SPIE, and IEEE. He earned a MS in Electrical Engineering from UCF and an Ed.D in Educational Leadership from FAU.

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TEXAS

The University of Texas at Austin

2020 Department of Energy Laser Safety Officer Workshop

March 31, 2020 - April 2, 2020

Workshop Description

DOE Event ID 38203
Registration Fee: $200

The U.S. Department of Energy (DOE) Laser Safety Officer (LSO) Workshop is for individuals with responsibility for, or interest in, laser safety in a research or academic setting. This 2.5-day Workshop will include both invited and contributed talks on current laser applications, and associated laser safety issues and solutions. The final day of the Workshop serves as the official meeting of the DOE–Energy Facility Contractors Group (EFCOG) Laser Safety Task Group, and a discussion group meeting of the Academic and Medical Laser Safety Officer (AMLSO) user group. The Board of Laser Safety (BLS) is also offering its Certified LSO (CLSO) examination prior to the Workshop.

Certification Maintenance (CM) points and Continuing Education Credits (CEC) for Workshop participation will be determined at the conclusion of the Workshop. Previously, the BLS awarded 2.5 CM points, the American Academy of Health Physics awarded 20 CEC's, and the American Board of Industrial Hygiene awarded 16 hours of CM credit.

More Information

Find us exhibiting!

LIA THE LASER INSTITUTE | BLS THE BOARD OF LASER SAFETY

Workshop Location

The workshop is being held in the Commons Event Center, JJ Pickle Campus of the University of Texas at Austin.

Commons Conference Center
10100 Burnet Road, Bldg 137
Big Tex Auditorium
Austin, TX 78705

Workshop Dates

Non-U.S. Citizen Visitor Information due:
Feb 1, 2020

Early bird registration payment due:
Feb 1, 2020

Certified Laser Safety Officer Exam registration and payment due to BLS:
Feb 29, 2020

Hotel registration (for conference rate)
March 1, 2020 (or rooms taken)

Laser Safety Officer Certification Exam:
Mar 30, 2020

Laser Safety Officer Workshop:
Mar 31-Apr2, 2020

DOE-EFCOG working group meetings:
Apr 2, 2020

AMLSO – University group meeting:
Apr 2, 2020

BLS
THE BOARD OF LASER SAFETY

NEWSLETTER

Volume 1 • Issue 1

Recently Certified

Tyler O'Neill - CLSO
Adapt Laser System

Kimberly Miller - CMLSO
Christiana Care Health System

Simon Lappi - CLSO
North Carolina State University

Netiti M Moori - CMLSO
West Physics

Daniel Atamanczyk - CLSO
Jet Propulsion Laboratory

Anthony Kerstens - CLSO
ZCS AKIA Engineers Inc.

Maureen Harris - CMLSO
Carolinas Medical Center

Amin M Hamideh - CLSO
Louisiana State University

Alexander Lindquist - CLSO
National Renewable Energy Laboratory

Olivia R. Fehlberg - CLSO
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Website: www.lasersafety.org

Changes Coming Soon!

We are excited to announce that BLS is working toward ANSI (ANAB) accreditation, which means that we will be making changes to our procedures to ensure we are in compliance with the ISO IEC 17024. This may result in changes to our certification management system, in particular record keeping. We will keep CLSOs and CMLSOs informed of the changes to come that may affect documentation requirements for recertification in the coming year.

Paper-and-Pencil Exam Administration

Moving forward, pencil-and-paper exams will no longer be offered following training courses. Rather, they will be offered twice per year; once in the spring and once in the fall. Our first exam opportunity of 2020 will be held prior to the 2020 DOE LSO Workshop on March 30, 2020. Computer-based testing will still be available year-round through our third-party test administrator. For exam information, visit www.lasersafety.org, or contact us at bls@lasersafety.org.

CLSO Exam Reference Guide Now Available

Thanks to the considerable efforts of the CLSO Technical Review Board, an updated CLSO Exam Reference Guide is now available and includes sample questions. This guide is available to download for free on the BLS website.

Download Here

DOE LSO Workshop

BLS will be exhibiting alongside LIA at the DOE LSO Workshop; this workshop is a great opportunity for CLSOs to earn CM credit toward renewal!

ASC Z136 Annual Meeting

The ASC Z136 Annual Meeting will be held in Austin, TX on March 30, 2020 and observers are welcome. For more information or to RSVP, please email z136@lia.org.

Write for BLS!

Looking for a way to earn BLS CM points for free? BLS has restarted it's newsletter and is inviting CLSOs and CMLSOs to share laser safety knowledge with the laser community! Published article submissions are worth 0.5 BLS Certification Maintenance (CM) points in Category 3. For more information on guidelines and regulations, email us at bls@lasersafety.org. Check out our first submission on the next page!

Reducing Facility Risk of Disposables and Accessories Entering the OR

by Casey Branham, CMLSO

About the Author - Certified Medical Laser Safety Officer

Casey Branham is the Operations Director at Agiliti where he works with OEMs to select new technology offerings and partners with large Health Systems around their laser program needs, including the service and delivery of over 330 surgical cases per day. Casey has over 7 years of experience as a certified laser operator and has over 6 years of experience managing multiple ambulatory surgery centers across the Eastern United States that provided laser treatments. He has also been a Board-certified medical laser safety officer for over 2 years.

There is a wide range of practices in how hospitals receive healthcare laser system (HCLS) disposables and accessories at their facility. As someone who works for a third-party provider that does this over 90,000 times a year, I've seen them all.

In some hospitals, the surgeon may ask for the instructions for use (IFU), or biomed may ask for the UL mark. In others, supply chain may just ask about the cost. There are very few exchanges where we see a Medical Laser Safety Officer (LSO) or Surgical Director present to review HCLS accessories and disposables – which is now a requirement under the latest Z136 guidelines.

Updated American National Standards Tackle Third-Party Provider Risk

ANSI Z136.3 (Sections 1.3.2.8 & 4.3.2) requires that a Medical Laser Safety Officer approve each HCLS and equipment prior to use. This includes any disposables and accessories for use in laser cases. This is necessary to ensure the correct combinations of items are used for each case.

For example, there is difference between an FDA approved item and an FDA approved system. The difference is that a disposable and an accessory can each be FDA approved, yet that specific combination may not be FDA approved based on the OEM and the IFUs for each.

When a facility owns its lasers and purchases fibers directly from the OEM, there isn't much risk of running into that issue. However, most hospitals do not have a process - or the appropriately certified laser safety professionals - in place to ensure items brought in by third-party providers are also approved (1.4.2).

> "Hospital staff may be unknowingly introducing risk into their OR that could impact patient outcomes."

The result? Hospital staff may be unknowingly introducing risk into their OR that could impact patient outcomes.

The LSO community has an opportunity to educate healthcare professionals on a thorough intake procedure needed to control what enters the OR and what combination of HCLS accessories and disposables can be used without limiting the surgeon's access to cutting edge technology.

A Good Place to Start: OEM vs. Non-OEM Fibers

My co-worker Richard Gama, CMLSO, presented a dynamic risk assessment tool at the International Laser Safety Conference last year to help LSOs take a closer look at the risk around non-OEM disposables used on different OEM devices. The concept is that risk is not binary or static – it is dynamic. Adding items to a procedure or using different non-OEM combinations may increase the risk that an unsafe event occurs in a laser case.

For example, the risk profile is very different between flexible fiber CO2 versus Holmium laser disposables. In the case of Holmium laser disposables, the fiber optic transmits laser energy. In the case of flexible fiber CO2, the CO2 fibers are made of different materials entirely (Silica hollow core or OmniGuide Polymer). The differences in materials create more aspects that require risk evaluation.

Holmium lasers emit 2100 nm wavelength energy, and the Holmium fibers transmit this energy. This relationship limits risk to the integrity of the fiber and the dexterity of the cladding. The IFUs for the Holmium fibers are validated for use on many different manufacturers' Holmium lasers. However, the LSO should review and approve and the laser settings prior to use.

There are several well-established third-party Holmium fiber manufacturers that exist today with proven track records. The established track record combined

with the simple make up of Holmium fibers makes a good argument for this being a low risk pairing.

The CO2 flexible fiber is a comparatively recent invention. OmniGuide claims to have produced the first hollow core polymer CO2 laser fiber in 1998. The OmniGuide fiber (known as a flexible instrument) carries 10,600 nm laser energy as well as helium gas at a predefined PSI based on the inner lumen of the flexible instrument.

The addition of this pressurized gas dramatically changes the risk profile. Due to this, the challenges around third-party silica fibers on OmniGuide equipment are many. The challenges for CO2 flexible fiber systems manufactured for use with silica fibers are not as dynamic because the material of the fiber is the same as the one intended for use on the HCLS.

Approving silica fibers for use on the OmniGuide laser creates several potential issues. The correct PSI setting for the pressurized gas is first and foremost, as no one wants to see an unanticipated tissue interaction or an airway fire. Once that risk is properly evaluated, the next risk is the durability of the silica fiber.

The OmniGuide polymer fiber is ideal for CO2 energy for a few reasons. The OmniGuide selling point is that it fails safely. Compared to a hollow core silica fiber, this is true. OmniGuide claims 23,000 surgeries without a single instance of a fiber breaking. The Maude database shows that a few hollow core silica-based CO2 fibers have broken inside patients or on the surgical field. CO2 laser energy does not diffuse at the same rate as Holmium energy; therefore, the risk of burns is high if the silica fiber breaks. In 2019, OmniGuide posted a product safety alert around the use of third-party silica fibers on their HCLS.

Approving silica CO2 laser fibers for use with systems designed to transmit CO2 energy through a silica fiber are much simpler to evaluate. The major issue there is identifying whether the IFU has a conversion chart for the PSI setting based on the CO2 silica laser fiber inner lumen diameter. The type of gas recommended for use with the HCLS OEM fibers and the one on the IFU for the non-OEM fiber also needs evaluation.

> "Facilities that follow the value analysis process may slow down how quickly an item is available for use, but they ensure the item has been properly reviewed."

Imagining a Better Process to Reduce Risk

In order to mitigate the risk described above, hospitals should implement a defined process that involves LSO review of the IFU for HCLS, accessories and disposables. There should also be a follow-up evaluation to determine whether the combined products suggested for use fits that of the IFU for the laser, accessory and the disposable.

After the LSO approves each item use and their combined use, the process moves to the value analysis committee in the same way a facility evaluates a new purchase. Facilities that follow the value analysis process may slow down how quickly an item is available for use, but they ensure the item has been properly reviewed. I often see this process used for new HCLS entering facilities, but I rarely see it when disposables or accessories are involved.

In summary, any process that allows a laser disposable into the facility OR without review from the LSO and a subsequent trip to value analysis increases facility risk. Third-party providers should be required to add any disposable to their contract, and any item should go through the value analysis committee prior to the disposable being placed on contract or entering the OR.

This reduces the risk that disposables enter a facility without proper review of the related IFUs. If your facility has not followed this process in the past, requesting all related IFUs for all contracted items from your third-party partner is a quick way to evaluate the risk you have today. Adopting a more rigorous disposable entry path policy is a proven way to limit risk in the future.

About BLS

The mission of the Board of Laser Safety (BLS) is to provide a means for the recognition of laser safety professionals through certification and to promote competency in the field of laser safety. BLS certification will enhance the credibility of a designated Laser Safety Officer, and demonstrate that individuals serving in the field have agreed to adhere to high standards of safety and professional practice. For the employer, having a CLSO or CMLSO on staff demonstrates due-diligence and helps to ensure legitimacy and adequacy of the laser safety program, validating the company's dedication to a safe working environment for all employees.