

LIA TODAY

Volume 33
Issue 3
2024

THE OFFICIAL NEWSLETTER OF LIA

On the Cover:

Entertainment Focus –
Trainee Progression

Also in this Issue:

2024 Industrial Laser
Conference Wrap-Up



LIA TODAY is published quarterly to educate and inform students and professionals of challenges and innovations in the field of photonic materials processing.

ISSN 2690-5981

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ENTERTAINMENT FOCUS — TRAINEE PROGRESSION

As part of a new feature each quarter, *Martin Barraclough* delves into various aspects of display laser use in the entertainment sector. In this edition, he talks about how the Technician Trainee Program has had positive outcomes and helped one LSO get out on the road with a very well known artist.

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Prof. Aravinda Kar
LIA 2024 President

As I write this, we are on the verge of the 43rd International Congress on Applications of Lasers & Electro-Optics (ICALEO®), to be held in Hollywood, California. This year's conference promises to provide attendees with an exceptional platform to showcase their work and learn about the latest advancements in laser materials processing. Topics of interest include, but are not limited to, micro- and nano-processing, transformative design enabled by laser additive manufacturing, the integration of artificial intelligence, and innovations in battery technology.

ICALEO offers not only a rich technical agenda but also a unique setting to reconnect with colleagues, meet new attendees, and foster fresh relationships. The conference's relaxed environment, combined with spontaneous interactions and deep technical discussions, often sparks innovative ideas and paves the way for future collaboration.

The future of laser applications in materials processing is bright and continues to evolve. With a collaborative approach involving industry, academia, and government, the potential for growth is immense. Opportunities are broadening, from laser-assisted semiconductor processing and high-density microelectronics packaging to advanced photonic device fabrication. Emerging fields, such as laser additive manufacturing with nanomaterials—like the deposition of ultrathin films and fabrication of nanostructures—hold great promise for novel products that could benefit society at large.

As we gather at ICALEO 2024, let us continue to explore these frontiers, push the boundaries of innovation, and work together to shape the future of laser technology.



Gilbert Haas
Executive Director

First, I'd like to extend a heartfelt thank you to everyone who expressed concern during the recent hurricanes in Orlando. The LIA team was well-prepared, and I'm happy to report that our offices sustained no damage, and everyone was back at work the following day.

We've been incredibly busy with several exciting initiatives. Our recent participation in FABTECH allowed us to forge key relationships with many of the laser companies exhibiting there. Meanwhile, our entire team is hard at work preparing for ICALEO, and we can't wait to reconnect with everyone in Hollywood, California. This year's agenda is shaping up to be outstanding.

I'm also thrilled to announce that the launch of our new LIA website is just weeks away. The fresh design and updated content will make it easier to access essential information about the organization. The site will also feature our enhanced membership structure, which includes several additional benefits for members.

Lastly, the updated Laser Safety Guide is currently in production, and you'll be hearing more about its release very soon.

We look forward to seeing many of you at ICALEO!

Catch up on all past issues!

<https://www.lia.org/subscriptions/lia-today>



Special Thanks to our Editorial Committee

- Martin Barraclough - ER Productions
- Dr. Youngfeng Lu - University of Nebraska - Lincoln
- Dr. David Sliney
- Dr. Ron Shaeffer - HH Photonics

LIA Staff Editors

Jana Langhans; John McCormack

A Look Ahead at Upcoming Laser Safety Training!

LIA's Newest Corporate Members!

LASER SAFETY OFFICER	LASER SAFETY OFFICER WITH HAZARD ANALYSIS	MEDICAL LASER SAFETY OFFICER	INDUSTRIAL LASER SAFETY OFFICER	CALCULATING LASER SYSTEM HAZARDS
February 19-21 Orlando, FL	February 19-23 Orlando, FL	March 16-17 Virtual - Zoom	March 20-22 Novi, MI	May 13-15 Virtual - Zoom
April 8-10 Orlando, FL	April 8-12 Orlando, FL	May 18-19 Eden Prairie, MN	May 15-16 Novi, MI	August 12-14 Virtual - Zoom
September 16-19 Orlando, FL	September 16-20 Orlando, FL	July 13-14 Virtual - Zoom	August 14-15 Novi, MI	December 16-18 Virtual - Zoom
November 18-20 Orlando, FL	November 18-22 Orlando, FL	September 7-8 New York, NY	November 13-14 Novi, MI	
		December 7-8 Virtual - Zoom		

For a complete list of courses, both online and in-person, please visit lia.org/training.

Course Highlight

MEDICAL LASER SAFETY OFFICER DEC 7-8, 2024 - VIRTUAL, ZOOM



Are you an RN, OR supervisor, surgical tech or training coordinator who has been assigned the critical responsibility of LSO in a medical facility? Designed to meet the special needs of medical professionals, LIA's Medical Laser Safety Course will provide the training you need to build and maintain a successful laser safety program.

As an LSO at a medical facility, you have a unique set of responsibilities. Not only is laser safety a top priority to protect your staff, but it is critical to protecting your patients. Our MLSO training program addresses the specific laser safety protocols as they relate to medical and healthcare environments.

This course meets all LSO training requirements as outlined by the ANSI Z136.3 Safe Use of Lasers in Health Care standard, OSHA, and The Joint Commission.

Welcome New Corporate Members

NEW LIA MEMBERS

- [Rudzinsky Associates](#)
- [Lasermet](#)
- [Northside Hospital](#)
- [Ventura Medtech Solutions](#)

To find out more about becoming a corporate member, email membership@lia.org or visit lia.org/membership/corporate.



Already an LIA member? Ask about joining our Facebook group!

A Look Ahead at Upcoming Laser Industry Conferences!

1. Photonics West - Jan 30-Feb 1, 2024 (San Francisco, CA, USA)
2. AORN - Mar 9-12, 2024 (Nashville, TN, USA)
3. AKL - Apr 17-19, 2024 (Aachen, Germany)
4. DOE Workshop - Apr 30 - May 2, 2024 (Austin, TX, USA)
5. FABTECH Mexico - May 7-9, 2024 (Mexico City, Mexico)
6. RAPID + TCT - June 25-27, 2024 (Chicago, IL, USA)
7. **LAM - July 15-17, 2024 (Dayton, OH USA)**
8. ALAW - June 25-27, 2024 (Novi, MI, USA)
9. IMTS - Sept 9-14, 2024 (Chicago, IL, USA)
- **ILC - Sept 11, 2024 (Chicago, IL USA)**
10. LANE - Sept 15-19, 2024 (Fürth, Germany)
11. FABTECH - Oct 15-17, 2024 (Chicago, IL, USA)
12. **ICALEO, Nov 4-7, 2024 (Hollywood, CA, USA)**



A Look Ahead at LIA's Industry Conferences!



November 4-7, 2024 - Hollywood, California

ICALEO Updates

43rd INTERNATIONAL CONGRESS ON APPLICATIONS OF LASERS & ELECTRO-OPTICS

Thank you to everyone who joined us for the 43rd annual International Congress on the Applications of Lasers and Electro-Optics!

Save the Date: ICALEO will be returning to Orlando, Florida for 2025! We are excited to host you at the beautiful Caribe Royale on October 13-16, 2025.



March 2-5, 2025 - Orlando, Florida

ILSC Updates

INTERNATIONAL LASER SAFETY CONFERENCE

Join us in Orlando, Florida from March 2-5, 2025 for the world's premier conference on laser safety!

Be a part of the discussion! The Call for Papers is currently open and accepting abstracts to present at ILSC. Visit ilsc.ngo/presenter-information to find more information on presenting.

Registration is opening soon! Subscribe to our mailing list to make sure you don't miss an update.

Early Bird Sponsorship opportunities are still available! Email marketing@lia.org or visit the ILSC website for more information on ways to spotlight your company during this year's event.

LIA's Upcoming Webinars

Laser Safety in the OR: Essential Insights for OR Managers

December 11, 2024, 2pm - 4pm ET

In celebration of the 10th anniversary of their collaboration, LIA and Agiliti present this free webinar where we'll dive into the critical aspects of laser safety in surgical environments.

You'll learn key strategies for ensuring the safety of both patients and staff when laser hazards are present, empowering you to maintain a safer, more compliant operating room.

Handheld Lasers: Managing Risks to Maximize Benefits

December 12, 2024, 1pm - 2pm ET

Handheld lasers are powerful tools with a wide range of applications, but they also come with unique hazards that require careful management.

This webinar explores the basic risks associated with handheld lasers and emphasizes the importance of laser safety in maximizing their benefits and handling these tools with confidence.



STUDENT SPOTLIGHT

Name: Keana Paredes
Hometown/State: Clermont, FL
Year in School: Class of 2024
Area of Study/Major: Photonic Science and Engineering

When were you first introduced to photonics/electro-optics?

I was first introduced to photonics during my freshman year at UCF in an engineering introduction class. During one of the lectures, Mike Mckee gave an amazing presentation about what photonics is and highlighted opportunities for learning within this field. I changed my major to join the College of Optics and Photonics very soon after that presentation.

What or who inspired you to choose your line of study?

I knew in school I wanted to focus on something that can transform science-fiction into reality. CREOL, The College of Optics and Photonics, offers diverse research opportunities that shaped my career aspirations. From advancing medical technologies to enabling groundbreaking space exploration, the diverse and far-reaching possibilities within photonics are both inspiring and motivating. Being able to contribute to such transformative developments is what drove me to continue studying this field.

Describe your favorite course that you took at UCF.

My favorite course that I took at UCF was Dr. Kyu Young Han's BioPhotonics course. Biology is inherently fascinating itself, the integration of photonics with biological sciences made this course particularly memorable. The exploration of light applications in medicine—such as laser surgery, genetic information analysis, and disease quantification—consistently left me in awe and motivated me to deepen my knowledge in this field.

Are you researching anything at the moment? Can you tell us about it?

Right now I am working for a space defense company building telescopes for deep space exploration. I can use my skillset I learned from CREOL to build these optical communication terminals.

What would you like to do in the future with your studies?

I plan to continue my education by pursuing a master's degree at CREOL and advancing my research in optics and photonics, with a particular focus on biophotonics.

2024 INDUSTRIAL LASER CONFERENCE WRAP-UP: ADVANCING LASER APPLICATIONS IN MANUFACTURING

The Laser Institute's Shaun Oleson reflects on this year's Industrial Laser Conference, co-located at the IMTS tradeshow in Chicago. Held on September 11 at McCormick Place, the conference brought together professionals to explore the latest advancements and applications of industrial lasers across various sectors.

The 2024 Industrial Laser Conference, co-located at the IMTS tradeshow in Chicago, proved to be a vibrant gathering of industry leaders, innovators, and experts in laser technology. Held on September 11 at McCormick Place, the conference brought together professionals to explore the latest advancements and applications of industrial lasers across various sectors.

technology is driving innovation in this field. Experts like Joy Gockel from the Colorado School of Mines and Eric Stiles from Precitec shared advancements in Laser Powder Bed Fusion and Wire Fed Metal AM, respectively. A notable panel discussion, "What's to Come," moderated by Eliana Fu of TRUMPF, offered forward-looking perspectives on the future of AM and the skills required for newcomers in the industry.

Conference continues to be a pivotal platform for professionals looking to incorporate laser technologies into their manufacturing processes, enhancing both efficiency and profitability.

We extend our gratitude to all speakers, participants, and sponsors for making this year's event a success. The insights and innovations shared at the conference underscore the transformative impact of laser technology in modern manufacturing.

We look forward to seeing you at the next Industrial Laser Conference!

Key Highlights

Diverse Sessions on Laser Applications

The conference featured four focused sessions, each diving deep into critical aspects of industrial laser applications. Session I, chaired by Adam Simons of TRUMPF, set the stage with insights into how lasers are evolving as essential tools in material processing.

Highlights included Heather George from TRUMPF discussing pulsed laser applications for precise material modification and Myriam Blanchet of Gentec-EO explaining the importance of laser power measurement for optimizing manufacturing processes.

Empowering Women in Photonics

The conference concluded with a powerful session dedicated to Women in Photonics, moderated by Alex Kingsbury of nLIGHT. Leading voices in the field, including Heather George, Melanie Lang of

Formalloy, and Samira Gruber of Fraunhofer IWS, shared their career journeys, highlighting the importance of mentorship and resilience in navigating the male-dominated field of photonics.

Additive Manufacturing in the Spotlight

Additive Manufacturing (AM) was a major theme, with two dedicated sessions showcasing how laser

Networking and Future Opportunities

The event wrapped up with a reception that provided attendees the opportunity to network and discuss collaborations. The Industrial Laser

"The Industrial Laser Conference continues to be a pivotal platform for professionals looking to incorporate laser technologies into their manufacturing processes, enhancing both efficiency and profitability."

ENHANCE YOUR KNOWLEDGE AND PROTECT
YOUR PATIENTS AND YOUR TEAM



FREE WEBINAR LASER SAFETY IN THE OR: ESSENTIAL INSIGHTS FOR OR MANAGERS

December 11, 2024 2:00PM-4:00PM ET

With innovations in medical laser applications, OR managers face new challenges related to compliance with evolving regulations, staff training, risk management, equipment maintenance, resource allocation, and incident response.

In celebration of their decade-long partnership, LIA and Agiliti are offering this free webinar where they will dive into the critical aspects of laser safety in surgical environments.

This session will provide an overview of laser safety regulations and introduce you to the ANSI Z136.3 standard, the cornerstone of laser safety in healthcare. You'll learn key strategies for ensuring the safety of both patients and staff when laser hazards are present, empowering you to maintain a safer, more compliant operating room.



Register Here!

Contact Hours & CM Points Available

Nurses can earn 2 nursing contact hours by attending the full webinar.

Earn 0.25 BLS Certification Maintenance Points by the Board of Laser Safety.

FREE Registration
sponsored by Agiliti



10 Years of Collaboration

LIA has partnered with Agiliti with the shared mission of providing world class laser safety education for 10 years!



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www.agilitihealth.com

Showing the tiered umbrella on the top of Chedi of Wat Phra That Hariphunchai, Lamphun, Thailand (photograph by S. Kamoldilok).



LASER APPLICATIONS IN ARTS AND CULTURE: AN EXAMPLE ON THE CONSTRUCTION OF TIERED UMBRELLAS

By: W. Phae-ngam; V. Tapanwong; K. Jeraratcharathorn; P. Sriwaralak; T. Chaiyakun; S. Kamoldilok; V. Kosalathip; K. Naemchanthara; P. Limsuwan

Abstract: Tiered umbrella or in Thai called Chat means a high decoration or decoration of honor, a type of umbrella that is stacked up in layers along a single axis. At present, in Thailand, the tiered umbrellas are seen in three important places including (1) on the top of the pagoda of various temples, (2) inside the ordination hall of temples, and (3) inside the Grand Palace for the king and the royal family. In the past, a tiered umbrella was made from brass because its color was similar to gold. Constructing each set of tiered umbrellas requires a skilled technician and takes a lot of time. At present, laser cutting of metals has been widely used in the production section of the industry. This is due to the advantages of laser cutting that include narrow kerf width, smooth cutting edges, high cutting speed, reduced material waste, no tool wear, and easy automation and manipulation even for complex shapes. In this work, an example for the construction of seven-tiered umbrellas from stainless steel sheets using a high-power CO2 laser

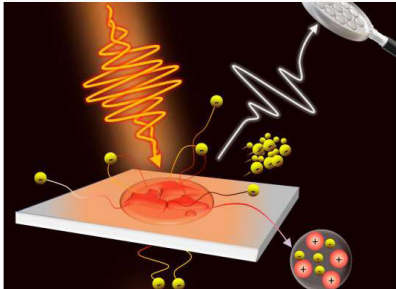
was reported. The results show that the total working time for the construction of a seven-tiered umbrella is about 113 h, which is much less time compared to 3–6 months taken by craftsmen. Therefore, this method can preserve the construction of tiered umbrellas in Thailand even though craftsmen are scarce at present.

Journal of Laser Applications 36, 042019 (2024);
<https://doi.org/10.2351/7.0001370>

Free to LIA Members!

Visit JLA Online: <https://lia.scitation.org/journal/jla>

Take a look at the top 4 articles on LIA's social media!



A 'MEASURE' ADVANCE FOR ULTRASHORT LASER LIGHT

The Tata Institute of Fundamental Research, Mumbai has pioneered a method to measure ultrahigh power, ultrashort laser pulses in a comprehensive manner.

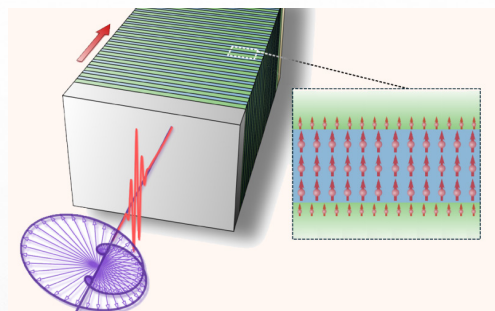
[Read more](#)



MICROLASER BANDAGE MEASURES GLUCOSE WITHOUT DRAWING BLOOD

A research team at NTU Singapore has developed a wearable sensor based on microlasers to measure biomarkers found in sweat. The bandage-like device could provide a way to monitor blood sugar levels noninvasively.

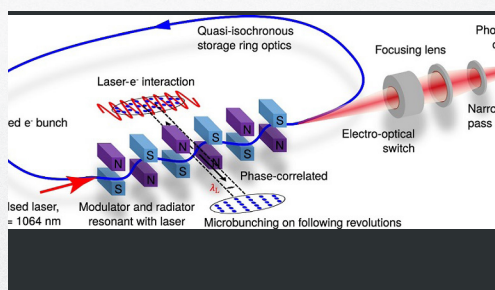
[Read more](#)



ULTRAFAST LASERS INDUCE SPIN CURRENTS DIRECTLY

Researchers use ultrashort laser pulses to trigger a spin-aligned electron flow on the few-femtosecond timescale—opening up a possible path toward faster spintronic devices.

[Read more](#)



LITHOGRAPHY-SUPPORTING SOURCE OUTPowers ESTABLISHED ACCELERATORS

A group of scientists are collaborating on building the foundation for a future source for coherent UV radiation, known as steady-state microbunching (SSMB).

[Read more](#)

As part of a new feature each quarter, *Martin Barraclough* delves into various aspects of display laser use in the entertainment sector. In this edition, he talks about how the Technician Trainee Program has had positive outcomes and helped one LSO get out on the road with a very well known artist.

This quarter, I wanted to feature a success story of one of our staff LSOs working out of our Vegas shop, Joe Himmelstein.

Joe joined the company a couple years back, already having some experience in the entertainment sector. He was keen to learn more, and to specialise in display lasers. Joe is a prime candidate for what we call a 'Trainee Show Technician'; someone already experienced in the world of work and competency but needing specific training.

Our Trainee Show Technician Program is comprehensive and takes a minimum of 1 year to complete. It's a great mix of shop training, on site mentorship, and formal training. Sure, an LSO course may teach some essential things, but being a rounded professional in the modern

entertainment sector takes more than just knowing your divergence from your wavelength.

We cover electrical safety, cable repair, laser alignment, manual handling, harness training, boom lift training. We test them on kit knowledge, have them undertake our flagship IOSH Safe Working With Display Lasers course. They must prove skills to supervisors and have attended at least 20 differing show sites over the course of the program. Throughout the year, we meet regularly with the trainee to track progress, set more specific targets, and this develops confidence that competence is growing.

Joe proceeded through the program with great diligence and success; the program is not an automatic process and requires the Trainee to take the initiative to complete. It was obvious that Joe would soon graduate and be handed his first solo jobs. We hold a celebratory ceremony for all our trainee graduates during global company meetings, where the graduate is handed a certificate and 'golden E-Stop'; supported by the company leadership team and promoting a culture of competence and accountability.

As Joe had showed such good progression, we felt it right to send him out on a tour that had just confirmed and started soon – a certain artist called Lionel Richie. You may have heard of him?



Various laser looks are safely curated to complement Lionel's legendary performances.



Joe was tasked with heading out alone with 6 of our 20-watt RGB units – the AT-20. Controlled by Panoglin Beyond Ultimate, and supported by two Viper smoke machines, Joe had to work alongside the tour lighting creatives to facilitate unique laser beam looks during some of Lionel's most memorable numbers. As with all display laser use, the output was a unique lighting look to support a creative and dynamic performer and stage set.

The tour took in 13 dates in music arenas across the USA over a 3 week period and was a huge success. Not only for Lionel, but for Joe. The training program paid off, and Joe delivered 13 safe shows,



The ER Productions AT-20 display laser is a great mid-power unit that creates stunning and coherent output, whilst having tour-friendly safety features and controls.



Joe Himelstein, Certified Show Technician, busy at his control station at a show.

supported by the wider ER team and permitted at state level where required.

Joe is a fine example of best practice for the modern display laser sector, working safely within the wider entertainment ecosystem. We are training the next wave of trainees, and learning all the time how we can create more outcomes like this. Well done Joe!



About the Author

Martin serves as Safety Director at ER Productions. He is a leading safety specialist, and a regular contributor at industry level. He has launched a series of courses to raise industry standards and harmonise working practices around the world in the field of display lasers.



ANSI Z136.3 - 2024 Revision Safe Use of Lasers in Health Care



New Revision Out Now!

We are excited to announce the release of the newly revised **ANSI Z136.3 American National Standard for the Safe Use of Lasers in Health Care (2024)**. This standard is the definitive guide on laser safety across all health care environments, providing comprehensive guidance for the safe use of lasers in diagnostic, cosmetic, preventative, and therapeutic applications.

Key Updates to ANSI Z136.3-2024 Include:

- Harmonization with the ANSI Z136.1 *Safe Use of Lasers*.
- Clarification concerning signage.
- Updates to the informative appendices
- Updated references to International Standards

This standard is indispensable for all medical Laser Safety Officers (LSOs) and is crucial for implementing and maintaining a successful medical laser safety program.

Get the 2024 Standard

www.lia.org/store - 407-380-1553 - z136@lia.org

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WANT TO SHARE YOUR IDEAS WITH THE LASER COMMUNITY THROUGH *LIA TODAY*?

LIA TODAY

Check out the guest article guidelines below and get in touch with an editor today!

BEFORE YOU SUBMIT:

Content: We are always looking for great newsworthy content that covers challenges and innovations in the field of photonic materials processing, laser safety, and laser market trends. This is not a paid opportunity, but does carry the benefit of publishing your work on a platform that is read by thousands of your peers. All article topics should be confirmed with an LIA TODAY editor before writing your article. Please email your article ideas to liatoday@lia.org and an editor will be in touch with you.

Potential Categories: Safety, medical applications, research and development, laser applications fundamentals, history, business, and other categories.

Potential Industries: Energy storage, aerospace, DoD non-aerospace, automotive, medical devices and biotechnology, microelectronics and IC fabrication, Internet of Things, research and development, and other industries.

SUBMISSION GUIDELINES:

Style: The tone should be editorial and informative; it should not sound like a sales pitch. It should be comprehensible by a broad audience of readers with low to expert experience with the topic, so it is important to include examples and simple explanations alongside any technical language.

Length: 600 - 1500 words

Text: Please use standard fonts such as Arial, Calibri, or Times New Roman. Fonts, font sizes, and line spacing will be reformatted by LIA for the final piece. Grammar and mechanics will be edited to the LIA style guide by LIA, but please be mindful of spelling and grammar as you are writing so that your message is clear.

Headline: Please include two newsworthy headlines suggestions for your article using action verbs.

Images & Figures: Please include images to be used with the article. Submit as an email attachment (PNG, GIF, JPG, JPEG) (min. 1000px in width or height). Images should also be placed in the body of the text where the author would like them to appear in the final article. All figures or images should include captions.

Deadlines: All material is due no later than two weeks prior to the scheduled publishing date. Check with an editor for your deadline.

Note: LIA reserves the right to abstain from publishing a submitted article for any reason.

SUBMISSION CHECK LIST:

- Full text as a Word Document
 - Abstract: A 50 – 100 word summary in plain language
 - Two (2) headline suggestions using an action verb
 - Article 600 – 1500 Words
 - Images with captions placed in the body of the article
 - Article references when applicable
 - Short author *bio* (full title, company, 50 words)
 - (optional) Professional headshot of author
- Images attached in one of the accepted file types (.png, .tiff, .jpeg, .jpg) (min. 1000px width or height).

[VIEW SUBMISSION FORM](#)