The Developments in Lasers, Optics and Photonics: Laser Tech 2019

By Benedette Cuffari, M.Sc. Mar 12 2019

Between April 15 and 16, 2019, the 2nd International Conference on Laser, Optics, and Photonics, otherwise known as Laser Tech, will take place in Frankfurt Germany. With this year's theme being "*Share the Vision to Shape the Future of Laser, Optics and Photonics*," attendees from a wide range of industries will have the opportunity to discuss new ideas, share practical development experiences and network with some of the leading innovators in technology from around the world.

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Introduction

The Laser Technology Market currently amounts to 7 billion USD and is expected to continue to rise to as much as 17 billion USD by the year 2020. This success is supported by a plethora of exciting peer-reviewed optics research and advancements that have been made in recent years from scientists around the world.

Within the specialized field of topological photonics, for example, the development of topological microlasers in 2018 allowed spectacular breakthroughs to be made in the analysis of two dimensional (2D) geometries. Furthermore, the incorporation of a topological-insulator laser into topological systems was found to provide an increased level of protection, nonlinearity, and gain, thereby serving as the foundation for the development of potential photonic lasers, sensors, and antennas.

Over the past several years, a drastic change within the photonics industry has occurred as a result of the tremendous amount of research that has gone into the development of the technology and devices that comprise this area of science. Advancements within the field of fiber optics have primarily supported the development of photonic sensors that are currently used in a wide variety of different industries. To this end, the Global Photonics Sensor Market is expected to experience a rise in its success that values to as much as $18 billion by the year 2021.

As the research in this area continues to advance, the photonics industry is expected to focus their technological developments on products that are increasingly eco-friendly, energy-conserving, safe and secure for their customers.

With this level of remarkable advancements that continue to arise around the world each year, researchers, principal investigators, experts and various other professionals that will be attending the 2019 conference will have the opportunity to discuss the future directions that these developments will have within their respective industries, as well as their potential implications to the environment. In particular, various health professionals including neurologists, dentists, ophthalmologists, and surgeons are expected to discuss the innovative solutions and applications that lasers, optics, and photonics can offer to address countless public health challenges.

Conference Features

With a clear emphasis on sharing evidence-based practice, educational innovation, and practical applications, as well as providing unique global network and collaboration opportunities, Laser Tech 2019 has set ambitious goals for this year’s conference. To further inspire the innovative minds that will be attending this year’s Lasers, Optics and Photonics conference, attendees will be able to directly interact with some of the leading academic and industrial visionaries from around the world.

This unique opportunity will not only expand the knowledge of attendees on the numerous applications and details of these technologies but is also expected to offer

potential solutions to any problems these professionals may be facing in their work. Laser Tech 2019 will, therefore, act as a platform to support knowledge, benchmarking and global networking, all of which will take place in a single and central location to bring all attendees together.

Lecture Series

In addition to providing a secure place to share ideas and knowledge, Laser Tech 2019 will also host various speakers that will be discussing a wide range of topics. These lecture series topics will include:

- Laser Medical Technologies
- Laser Systems
- Semiconductor Lasers
- Advanced Laser Processing and Manufacturing
- Lightwave Communications and Optical Networks
- Optical Metrology
- Active Optical Sensing
- Ultrafast Optics
- Nanophotonics and Micro/Nano Optics
- Fiber Photonics
- Biophotonics

Attendees of all backgrounds and research interests will be able to find informative lectures to attend throughout this conference.

Future Directions

There is no doubt that a significant amount of progress has been made in the development of laser, optics and photonics devices. As the researchers and industry professionals attending Laser Tech will be discussing past successes, they will surely examine how these industries will continue to evolve in the future.

For example, the increased interest in combining quantum dots, which are tiny and atom-like structures, with laser technology has a promising future for integrated photonic circuits. One of the main advantages of quantum dots is their increased stability within photonic circuits as a result of their localized and atom-like energy states. Furthermore, quantum dots also require much less energy due to the eliminated electric current.

References

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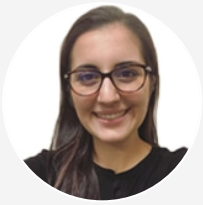

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After completing her Bachelor of Science in Toxicology with two minors in Spanish and Chemistry in 2016, Benedette continued her studies to complete her Master of Science in Toxicology in May of 2018. During graduate school, Benedette investigated the dermatotoxicity of mechlorethamine and bendamustine, which are two nitrogen mustard alkylating agents that are currently used in anticancer therapy.