

# Congress Information and Agenda of Sessions

## FiO LS Frontiers in Optics + Laser Science

**08 – 12 October 2023**

Greater Tacoma Convention  
Center Tacoma, Washington, USA

An In-Person with On-Demand Content Event  
Presented with Optica Laser Congress

**FrontiersInOptics.com | #fiols23**

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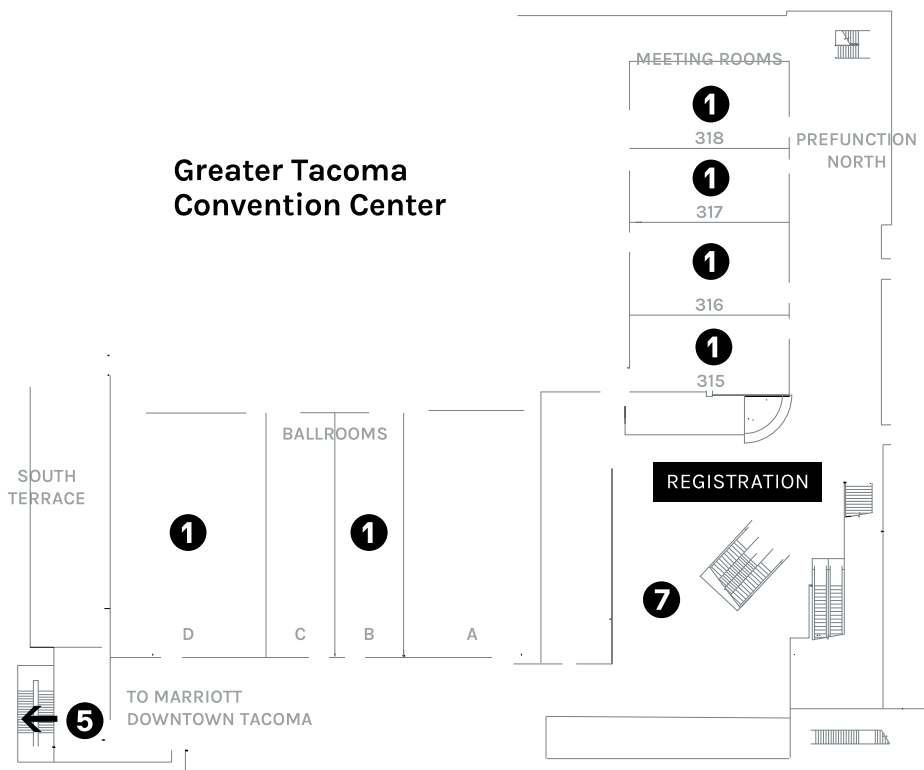
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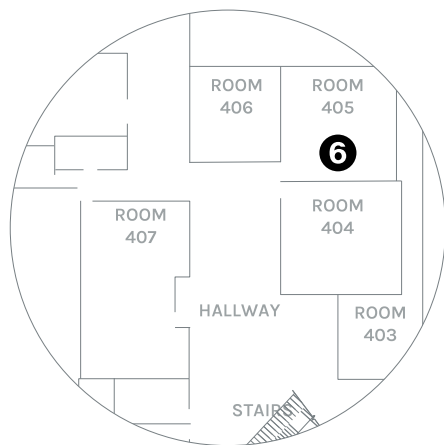
# Floor Plan

## Greater Tacoma Convention Center

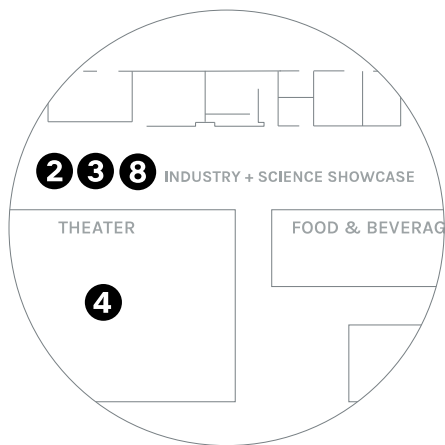
### Third Floor



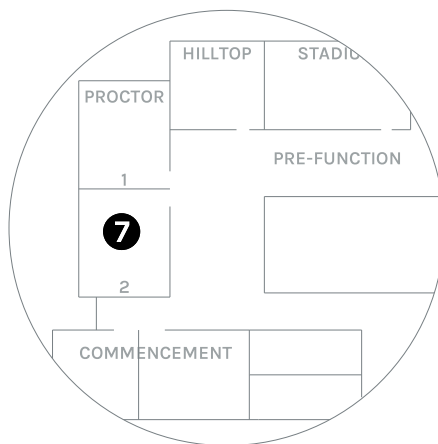
### Fourth Floor



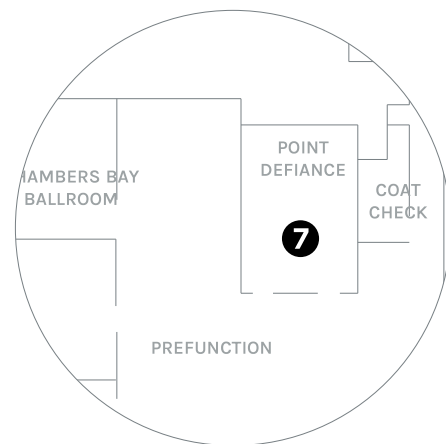
### Fifth Floor, Industry + Science Showcase



### Marriott Downtown Tacoma Second Floor



### Third Floor



- ① Technical Session
- ② Poster Session
- ③ Industry + Science Showcase
- ④ Showcase Theater
- ⑤ Marriott Downtown Tacoma
- ⑥ Foundation Challenge
- ⑦ Technical Group Events
- ⑧ Coffee Breaks

# 2023 Frontiers in Optics + Laser Science

## 09–12 October 2023

Greater Tacoma Convention Center, Tacoma (Greater Seattle Area), Washington, USA  
Frontiers in Optics + Laser Science will be presented with the Optica Laser Congress as an in-person event with on-demand content.

Pacific Daylight Time (UTC–07:00)

## Agenda of Sessions — Monday, 09 October

Pacific Day-light Time (PDT, UTC-07:00)	FiO Room 315	FiO Room 316	FiO Room 317	FiO Room 318	FiO Ballroom BC	LS Ballroom D	Room 405
07:00-18:00	Registration, Lobby, Level 3						
08:00-10:00	FM1A • Virtual Reality and Augmented Vision Theme: Your Next Wearable Spatial Computing Platform	FM1B • Quantum Optics and Photonics	FM1C • Optical Instrumentation	FM1D • Signal Processing in Optical Transmission	FM1E • Microscopy and Machine Learning	LM1F • Anderson Dissertation Award Presentations	
10:00-10:45	Coffee Break, Lobby, Level 3						
10:00-11:00	SpE12 • Optica Publishing Group Meet the Journal Editors, Ballroom A						
10:45-11:30	FM2A • FiO VR/AR Visionary Session, Ballroom BC					LM2B • Strong Field, Ultrafast and Short Wavelength I	
11:00-12:30	SpE15 • The Emotionally Intelligent Manager, Using Your Heart as well as Your Head to Manage Effectively, Tacoma Room, 2nd Floor, The Marriott Tacoma Downtown						
11:45-12:45	FM3A • Virtual Reality and Augmented Vision Theme: Simulating the Next	FM3B • Ultrafast Lasers and Applications	FM3C • Nanophotonics	FM3D • Optical Amplification	FM3E • Ophthalmology and Vision		
12:00-18:00	SpE24 • Laser Science Symposium on Undergraduate Research, The Chambers Bay Ballroom, 3rd Floor, The Marriott Tacoma Downtown						
12:30-13:30	SpE37 • DEI Event Educational Outreach and Gender Equity in Pakistan, Science and Industry Showcase, Booth 409						
12:30-16:30	Exhibit Hours, Science and Industry Showcase, Level 5						
12:30-16:30	SpE20 • Optica Career Fair, Science and Industry Showcase, Booth 413,						
12:45-14:00	JM4A • Joint Poster Session I and Lunch with Exhibitors, Science and Industry Showcase, Level 5						
13:00-13:30	SpE36 • Starting Point: Meet the Exhibitors, Science and Industry Showcase, Booth 601						
13:30-14:30	SpE38 • Optica Tech Group Meet-Up, Science and Industry Showcase, Booth 409						
14:00-16:00	FM5A • Virtual Reality and Augmented Vision Theme: Future's Wearable Displays	FM5B • Integrated Photonics	FM5C • Optical Fabrication (ends at 15:45)	FM5D • Systems and Sub-systems in Optical Communications	FM5E • Emerging Imaging Technologies in Biomedicine	LM5F • Quantum Information and Entanglement with Photons	FM5G • Use Photonics. Change the World: Environment Symposium
14:15-14:45	SpE26 • Black in Optics Meetup, Science and Industry Showcase, Booth 601						
14:30-15:30	SpE39 • A Wholistic Approach to Managing Stress in Unprecedented Times, Science and Industry Showcase, Booth 409						
15:00-15:30	SpE31 • Meet the Optica Foundation Team, Science and Industry Showcase, Booth 601						
16:00-16:30	Coffee Break with Exhibitors, Science and Industry Showcase, Level 5 Sponsored by American Elements, American Institute of Physics and Meta Platforms Technologies LLC						
16:30-18:30	FM6A • Virtual Reality and Augmented Vision Theme: Emerging Meta Optics for AR/VR (ends at 18:00)	FM6B • Novel Qubits and Emitters; Quantum Communications	FM6C • Optical Metrology	FM6D • Photonic Devices and Integrated Circuits (ends at 19:00)	FM6E • Biophotonics and Applications	LM6F • Strong Field, Ultrafast and Short Wavelength II	
17:30-21:00	FiO + LS Awards Ceremony and Reception, Museum of Glass (Invitation Only)						
19:00-20:00	SpE9 • Technical Group Event: Rapid Fire Lasers, Advancing Manufacturing through Light, Room 315 SpE23 • Bio-Optics Technical Groups Happy Hour, Proctor I Room, 2nd Floor, The Marriott Tacoma Downtown						

Key to Conference Abbreviations F – Frontiers in Optics L – Laser Science Sp – Special Event J – Joint Session

# Agenda of Sessions — Tuesday, 10 October

Pacific Day-light Time (PDT, UTC-07:00)	FiO Room 315	FiO Room 316	FiO Room 317	FiO Room 318	FiO Ballroom BC	LS Ballroom D	Room 405
07:00–18:00	FiO Registration, Lobby, Level 3						
08:00–09:00	FTu1A • Virtual Reality and Augmented Vision Theme: Art and Perception	FTu1B • Quantum Technologies Theme: Quantum Computing and its Applications	FTu1C • Complex States of Light I (ends at 08:45)	FTu1D • Advancement in Optical Fibers	FTu1E • Plasmonic and Metamaterials	LTu1F • Quantum Sensing (ends at 08:45)	
09:00–09:15	Break						
09:15–10:00	FTu2A • FiO Quantum Technologies Visionary Session, Ballroom BC LTu2B • Laser Science Visionary Session I, Ballroom D						
10:00–15:30	Exhibit Hours, Science and Industry Showcase, Level 5						
10:00–15:30	Science and Industry Showcase, Theater			Science and Industry Showcase, Exhibit Hall			
	JTu3A • Joint Plenary Session I, 10:30–11:30  Quantum Systems Out-of-the-Lab: Successes, Challenges, and Opportunities, 12:15–13:15  What Chatbots Mean for Optics, 13:45–14:30  State of the Industry, 14:45–15:30			Coffee Break with Exhibitors, 10:00–10:30 Sponsored by American Elements, American Institute of Physics and Meta Platforms Technologies LLC  JTu4A • Joint Poster Session II, 11:30–13:00  Lunch with Exhibitors, 12:45–14:00  JTu5A • Joint Poster Session III, 14:00–15:30  Coffee Break with Exhibitors, 15:00–15:30 Sponsored by American Elements, American Institute of Physics and Meta Platforms Technologies LLC			
10:30–16:30	SpE21 • Optica Career Fair, Science and Industry Showcase, Booth 413						
11:30–12:00	SpE34 • Plenary Q&A, NextGen Lounge Foundation Team, Science and Industry, Showcase, Booth 601						
11:30–12:30	SpE13 • Transitioning into a Career in Optics, Room 317 SpE40 • Tech Talk: Femtosecond Laser Cleaving of Polymers using a Non-Diffracting Beam, Science and Industry, Showcase, Booth 409						
12:00–12:45	SpE27 • Career Perspectives Roundtable: Academia, Science and Industry, Showcase, Booth 601						
12:00–16:00	SpE11 • Photobiomodulation for the Brain: Current Status and Paths Forward Workshop, Point Defiance Room, 3rd Floor, The Marriott Tacoma Downtown						
12:30–13:30	SpE41 • Tech Talk: The Engineering of Industrial Laser Products, Science and Industry, Showcase, Booth 409						
13:00–13:30	SpE25 • Asians in Optics Meetup, Science and Industry, Showcase, Booth 601						
13:00–14:00	SpE10 • Holography and Diffractive Optics Technical Group Networking Lunch, Proctor I Room, 2nd Floor, The Marriott Tacoma Downtown						
13:45–14:30	SpE29 • Career Perspectives Roundtable: Nonprofit and Government, Science and Industry, Showcase, Booth 601						
14:30–15:30	SpE42 • Tech Talk: LiDAR, Quantum Key Distribution (QKD) Systems, Free Space Optical (FSO) Satellite Links, Science and Industry, Showcase, Booth 409						
14:45–15:30	SpE28 • Career Perspectives Roundtable: Industry, Science and Industry, Showcase, Booth 601						
15:30–17:00	FTu6A • Virtual Reality and Augmented Vision Theme: Design for Humans	FTu6B • Quantum Technologies Theme: Ion Trap Quantum Computing (ends at 16:30)	FTu6C • Complex States of Light II (ends at 16:45)	FTu6D • Optical System	FTu6E • Beam Steering and Lidar Applications (ends at 16:30)	LTu6F • Biology and Chemistry Applications	FTu6G • Use Photonics. Change the World: Information Symposium
17:00–17:30	Break						
17:30–18:30	JTu7A • Joint Postdeadline Session I	JTu7B • Joint Postdeadline Session II	JTu7C • Joint Postdeadline Session III			DLS Business Meeting	
18:30–21:00	Conference Reception, Lobby, Level 3						

## Key to Conference Abbreviations

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# Agenda of Sessions — Wednesday, 11 October

Pacific Day-light Time (PDT, UTC-07:00)	FiO Room 315	FiO Room 316	FiO Room 317	FiO Room 318	FiO Ballroom BC	LS Ballroom D	Room 405
07:30–17:30	FiO Registration, Lobby, Level 3						
08:00–09:00	FW1A • Machine Learning Theme: Metaoptics and Machine Learning	FW1B • Quantum Technologies Theme: Quantum Communications	FW1C • Light-Matter Interactions I (ends at 08:30)	FW1D • Coherence and Interference	FW1E • High-Speed Modulations	LW1F • Attosecond CM	
09:00–09:15	Break						
09:15–10:00	FW2A • FiO Machine Learning Visionary Session I, Ballroom BC LW2B • Laser Science Visionary Session II, Ballroom D						
10:00–15:30	Exhibit Hours, Science and Industry Showcase, Level 5						
10:00–15:30	Science and Industry Showcase, Theater			Science and Industry Showcase, Exhibit Hall			
	JW3A • Joint Plenary Session II, 10:30–11:30  How to Avoid Common Mistakes in Patent and Trade Secret Laws, 13:45–14:30			Coffee Break with Exhibitors, 10:00–10:30 <i>Sponsored by American Elements, American Institute of Physics and Meta Platforms Technologies LLC</i>  Lunch with Exhibitors, 13:00–14:00  JW4A • Joint Poster Session IV, 14:00–15:30  Coffee Break with Exhibitors, 15:00–15:30 <i>Sponsored by American Elements, American Institute of Physics and Meta Platforms Technologies LLC</i>			
10:30–16:30	SpE22 • Optica Career Fair, Science and Industry Showcase, Booth 413						
11:30–12:00	SpE35 • Plenary Q&A, NextGen Lounge Foundation Team, Science and Industry, Showcase, Booth 601						
11:30–12:30	SpE43 • Tech Talk: Laser Induced Breakdown Spectroscopy Team, Science and Industry, Showcase, Booth 409						
12:30–13:30	SpE44 • Tech Talk: Distinguished Engineer on the Technology Strategy, Architecture, and Planning team at Verizon, Science and Industry, Showcase, Booth 409						
13:00–13:30	SpE32 • Optica President Meet and Greet, Science and Industry, Showcase, Booth 601						
13:45–14:30	SpE30 • Interviewing 101, Science and Industry, Showcase, Booth 601						
14:30–15:30	SpE45 • Tech Talk: Camera Optics Miniaturization Towards Form Factor AR, Science and Industry, Showcase, Booth 409						
14:45–15:30	SpE33 • Outreach on a Tight Budget, Science and Industry, Showcase, Booth 601						
15:30–17:00	FW5A • Machine Learning Theme: Optical Computing	FW5B • Quantum Technologies Theme: Quantum Technology	FW5C • Light-Matter Interactions II (begins at 15:00)	FW5D • Computational/Transformation Optics and Optics in Computing	FW5E • Lithium Niobate-Based Devices	LW5F • Ultrafast Quantum Materials	FW5G • Use Photonics. Change the World: Health Symposium
17:00–17:30	Break						
17:30–19:00	FW6A • Machine Learning Theme: Artificial Intelligence/ Machine Learning for Imaging and Spectroscopy	FW6B • Quantum Technologies Theme: From Quantum Computing to Quantum Sensors	FW6C • Ultrafast Optical Interactions in Nanostructured Materials (ends at 18:30)	FW6D • General Information Acquisition and Processing (ends at 18:30)	FW6E • Photonic Neural Networks	LW6F • Metamaterials I	
19:30–21:00	SpE14 • Movie Night – The Hunt for Planet B, Empire Lobby						

## Key to Conference Abbreviations

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# Agenda of Sessions — Thursday, 12 October

Pacific Day-light Time (PDT, UTC-07:00)	FiO Room 315	FiO Room 316	FiO Room 317	FiO Room 318	FiO Ballroom BC	LS Ballroom D
07:30–12:30	FiO Registration, <i>Lobby, Level 3</i>					
08:00–09:00	FTh1A • Machine Learning Theme: Computational Imaging and Machine Learning	FTh1B • Quantum Networking and Metrology	FTh1C • Nonlinear Interactions and Applications	FTh1D • General Information Display Technology	FTh1E • Optomechanic and MEMS	LTh1F • Metamaterials II
09:00–09:15	Break					
09:15–10:00	FTh2A • FiO Machine Learning Visionary Session II, <i>Ballroom BC</i> LTh2B • Laser Science Visionary Session III, <i>Ballroom D</i>					
10:00–10:30	Coffee Break, <i>Lobby, Level 3</i>					
10:30–12:30	FTh3A • Machine Learning Theme: Inverse Design and Machine Learning	FTh3B • Novel Platforms, Methods, and Devices	FTh3C • Frequency Combs, High-Harmonic Generation, and Attoscience	FTh3D • 3D and Light-Field Optics in Information Acquisition and Display Applications	FTh3E • Frequency Combs and Nonlinear Photonics	LTh3F • Metamaterials III (ends at 11:45)

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# FiO + LS Committees

*Thanks to the technical program committee members! Your time and efforts are appreciated!*

## Frontiers in Optics General Chairs

Turan Erdogan, *Plymouth Grating Laboratory, Inc., USA*  
Andrew Forbes, *University of Witwatersrand, South Africa*

## FiO Theme Coordinators

### Machine Learning

Lei Tian, *Boston University, USA*  
Kristina Monakhova, *Massachusetts Institute of Technology, USA*

### Quantum Technologies

Karan Mehta, *Cornell University, USA*,  
Chris Myatt, *Physicist, Entrepreneur, Board Member, Advisor, USA*

### Virtual Reality and Augmented Vision

Kaan Ak it, *University College London, UK*  
Douglas Lanman, *Reality Labs Research, Meta, USA*

## FiO Program Subcommittees

### FiO 1: Fabrication, Design and Instrumentation

Liangcai Cao, *Tsinghua University, China*, **Subcommittee Chair**  
Sung-Wook Min, *Kyung Hee University, Republic of Korea*  
Jyrki Saarinen, *University of Eastern Finland (UEF), Finland*  
Tomasz Kozacki, *Warsaw University of Technology, Poland*  
Raktim Sarma, *Sandia National Laboratories, USA*  
Yuan Luo, *National Taiwan University, Taiwan*  
Ayano Tanabe, *Citizen Watch Company, Japan*  
Yusuke Nakamura, *Hitachi, Japan*  
Florian Willomitzer, *Northwestern University, USA*  
Liangcai Cao, *Tsinghua University, China*  
Lan Yang, *Washington University in St. Louis, USA*  
Zhuo Wang, *LCE Optics, USA*

### FiO 2: Optical Interactions

Lyuba Kuznetsova, *San Diego State University, USA*, **Subcommittee Chair**  
Angela Dudley, *CSIR National Laser Centre, South Africa*  
Shawn Sederberg, *Simon Fraser University, Canada*  
Luat Vuong, *University of California, Riverside, USA*  
Ayman Abouraddy, *CREOL, USA*  
Kayn Forbes, *University of East Anglia, UK*  
Erick Schartner, *University of Adelaide, Australia*  
Khanh Kieu, *University of Arizona, USA*

### FiO 3: Quantum Electronics

Karan Mehta, *Cornell University, USA*, **Subcommittee Chair**  
Ehab Awad, *King Saud University, Saudi Arabia*  
Sara Mouradian, *University of Washington, USA*  
Jeremy Sage, *IonQ, USA*  
Jianwei Wang, *Peking University, China*  
Wenchao Xu, *PSI - ETH Zurich, Switzerland*  
Linran Fan, *University of Arizona, USA*  
Maciej Malinowski, *Oxford Ionics, UK*  
Tim Schroder, *Humboldt Universitat Berlin, Germany*

### FiO 4: Fiber Optics and Optical Communications

Chuan Qin, *Microsoft Corporation, USA*, **Subcommittee Chair**  
Julia Larikova, *Infinera, USA*  
Inwoong Kim, *Fujitsu, USA*  
Chen Zhu, *Baidu, China*

Mengjie Yu, *University of Southern California, USA*  
Xinru Wu, *Intel, USA*  
Di Che, *Nokia Bell Labs, USA*  
Stanley Cheung, *Hewlett-Packard Labs, USA*  
Roberto Proietti, *Polytechnic University of Turin, Italy*  
Lawrence Chen, *McGill University, Canada*

### FiO 5: Integrated Devices for Computing, Sensing and Other Applications

Brian Stern, *Nokia Bell Labs, USA*, **Co-Subcommittee Chair**  
Yu Li, *Shanghai Jiao Tong University, China*, **Co-Subcommittee Chair**  
Takuo Tanemura, *University of Tokyo, Japan*  
Christopher V. Poulton, *Analog Photonics, USA*  
Nikolai Klimov, *National Institute of Standards and Technology, USA*  
Xianshu Luo, *Advanced Micro Foundry, Singapore*  
Weidong Zhou, *University of Texas at Arlington, USA*  
Cheng Wang, *City University of Hong Kong, China*  
Aseema Mohanty, *Tufts University, USA*  
Arka Majumdar, *University of Washington, USA*  
Xiaoxi Josh Wang, *Intel, USA*  
Jiawei Wang, *Harbin Institute of Technology, China*  
Chao Xiang, *Hong Kong University, China*  
Argishti Melikyan, *Coherent, USA*

### FiO 6: Optics in Biology, Medicine, Vision and Color

Ireneusz Grulkowski, *Nicolaus Copernicus University, Poland*, **Subcommittee Chair**  
Judith Birkenfeld, *Instituto de Óptica CSIC, Spain*  
Timothy M. Baran, *University of Rochester, USA*  
Wu Yuan, *The Chinese University of Hong Kong, Hong Kong*  
Hatice Ceylan Koydemir, *Texas A&M University, USA*  
Bella Manshian, *KU Leuven, Belgium*  
Pilhan Kim, *IVIM Technology Inc, Republic of Korea*

### FiO 7: Information Acquisition, Processing and Display

Partha Banerjee, *University of Dayton, USA*, **Subcommittee Chair**  
Elena Stoykova, *Bulgarian Academy of Sciences, Bulgaria*  
Yaping Zhang, *Kunming University of Science and Technology, China*  
George Nehmetallah, *Catholic University of America, USA*  
Naveen Nischal, *Indian Institute of Technology, Patna, India*  
Pietro Ferraro, *Institute of Intelligent Systems, CNR, Italy*  
Basanta Bhaduri, *Tokyo Electric America, USA*  
Mallik Hussain, *Halo Industries, USA*  
Chau-Jern Cheng, *National Taiwan Normal University, Taiwan*  
Juan Liu, *Beijing Institute of Technology, China*  
Pascal Picart, *LeMans University, France*  
Abbie Watnik, *Naval Research Laboratory, USA*

### Laser Science Program Committee

David Reis, *SIMES (Stanford Institute for Materials and Energy Sciences), USA*, **Chair**  
Susan Dexheimer, *Washington State University, USA*, **Chair**  
Chun-Chien Chang, *Los Alamos National Laboratory, USA*, **Subcommittee Chair, LS 1 Nanophotonics, Plasmonics and Metamaterials**  
Nick Vamivakas, *University of Rochester, USA*, **Subcommittee Chair, LS 2: Quantum Science**  
Sergio Carbajo, *University of California, Los Angeles, USA*, **Subcommittee Chair, LS 3: Ultrafast Dynamics in Complex Systems**  
Alexandra Landsman, *Ohio State University, USA*, **Subcommittee Chair, LS 4: XFEL and High-Field Laser Science**  
Mathew Graham, *Oregon State University, USA*, **Subcommittee Chair, LS: 5 Biophotonics and Chemistry Applications**



# Plenary Speakers



**Pablo Artal**

Director, Center for Research in Optics and Nanophysics, University of Murcia, Spain

**Towards Wearable Adaptive Optics for Vision**

Adaptive optics is a technology used in the last decades in vision and ophthalmology. Artal will present a historical perspective of the field with emphasis in the current efforts to develop wearable devices for both vision testing and correction.

**About the Speaker:** Pablo Artal is a professor of optics at the University of Murcia, Spain. During his illustrious career, he pioneered advances in the methods for studying the optics of the eye and expanded the understanding of the factors that limit human visual resolution. In addition, Artal has published more than 400 reviewed papers, resulting in more than 24,000 citations and an h-index of 81 in Google Scholar, and serves as a co-inventor on more than 35 international patents. Over the course of his career, Artal has received expansive accolades, including Optica's Edwin H. Land Medal and Edgar D. Tillyer Award, the Spanish National Research award Juan de la Cierva, and the Spanish Royal Physics Society medal.

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**Karen Trentelman**

Senior Scientist, Head of Technical Studies, Getty Conservation Institute, USA

**Art as Evidence: Uncovering the Past Through the Scientific Analysis of Works of Art**

The scientific analysis of works of art is carried out to answer questions related artist's technique, provenance, historic technologies and material properties. Utilizing primarily non-invasive imaging and spectroscopic techniques, studies on objects ranging from mummies to Medieval manuscripts to paintings by masters such as Rembrandt and van Gogh will be presented.

**About the Speaker:** Karen Trentelman is Senior Scientist and Head of Technical Studies Research at the Getty Conservation Institute in Los Angeles, California, USA. Over the course of her career as a cultural heritage scientist Dr. Trentelman has carried out studies on works in museum collections ranging from ancient mummies to modern plastics. Dr. Trentelman was a pioneer in the use of Raman spectroscopy for the study of works of art, receiving the first NSF grant awarded to a cultural heritage institution. Her research revealed the use of unusual pigments in Medieval manuscripts and Renaissance paintings and shed new light on the technologies employed by ancient craftsmen to create Attic pottery and bronze sculpture. Her work currently focuses on the integration of multiple imaging and spectroscopic technologies to facilitate collaborative research between scientists, conservators and art historians to better understand, appreciate and preserve our cultural heritage.

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# Visionary Speakers



**Félicie Albert**

Senior Scientist, Lawrence Livermore National Laboratory, USA



**Daniel J. Blumenthal**

Distinguished Professor Electrical and Computer Engineering, University of California, Santa Barbara, USA



**Demetrios Christodoulides**

Endowed Chair Professor of Electrical and Computer Engineering, University of Southern California, USA



**Munira Khalil**

Chair and Leon C. Johnson Endowed Professor of Chemistry, University of Washington, USA



**Aydogan Ozcan**

Professor, University of California, Los Angeles, USA



**Jannick Rolland**

Brian J. Thompson Professor of Optical Engineering, University of Rochester, USA



**Laura Waller**

Professor of Electrical Engineering and Computer Sciences, University of California Berkeley, USA



# Awards, Honors and Special Recognitions

Optica, the Optica Foundation, and APS/Division of Laser Science congratulate the following award and honor recipients.

## Optica 2023 Awards and Honors

### Frederic Ives Medal/Jarus W. Quinn Prize



**Robert Boyd**, *University of Ottawa, Canada and University of Rochester, USA*

The Ives Medal/Quinn Prize recognizes overall distinction in optics and is Optica's highest award. It was endowed by charter member Herbert Ives, in honor of his father, photography pioneer Frederic Ives. A subsequent endowment in honor of long-time Executive Director Jarus Quinn funds the prize.

Optica honors Boyd for pioneering contributions to nonlinear optics, including slow light, quantum imaging, and the development of nanocomposite optical materials and metamaterials.

Boyd received his B.S. degree in physics from Massachusetts Institute of Technology, USA, and his Ph.D. from the University of California at Berkeley, USA. He joined the faculty of the University of Rochester in 1977. In 2010, he became Professor of Physics and Canada Excellence Research Chair in Quantum Nonlinear Optics at the University of Ottawa, while retaining his ties with the University of Rochester.

A giant in the field of nonlinear optics, Boyd has significantly impacted the areas of slow and fast light, quantum imaging, and composite materials and metamaterials. He is author of the authoritative textbook, *Nonlinear Optics*, many highly cited papers, and has 9 US patents. An outstanding volunteer, he has served on Optica committees and councils for nearly 40 years. He was a member of the Optica Board of Directors and editor or guest editor for *Applied Optics*, *JOSA B*, *Optical Materials Express*, and *Optics Express*.

He is a Fellow of Optica, Royal Society of Canada, and IEEE, and has won several awards including Optica's Charles Hard Townes Medal, the Arthur L. Schawlow Prize in Laser Science, and the Humboldt

He is currently working on the Accelerator on a Chip International Program (ACHIP) with a goal of demonstrating a laser-driven accelerator on a chip.

He is an outstanding volunteer, serving the Society in many capacities, including President. He is a Fellow of Optica, the American Association for the Advancement of Science, the American Physical Society, the California Council on Science and Technology, IEEE Photonics Society, IBM, the Laser Institute of America, and the National Academy of Inventors. He is the recipient of several awards and honors, including Optica's Frederic Ives Medal/Jarus W. Quinn Prize, R. W. Wood Prize, and Adolph Lomb Medal; the Photonics Award, the Willis E. Lamb Award for Laser Science and Quantum Optics, and the A.L. Schawlow Award.



**James C. Wyant**, *University of Arizona, Wyant College of Optical Sciences, USA*

Wyant is honored for his pioneering contributions to advancing the science and technology of quantitative interferometric metrology, his leadership as an educator and entrepreneur, and his visionary service to the global optics and photonics community.

Wyant earned his M.S. and Ph.D. degrees from The Institute of Optics, University of Rochester, USA, and his B.S. in Physics from the Case Institute of Technology (now Case Western Reserve University), USA. After receiving his Ph.D., Wyant joined Itek, in Burlington, MA, USA, and worked at the interface of holography and rapidly developing computer technology. He later returned to academia with a faculty appointment at the Optical Sciences Center (OSC), University of Arizona. He went on to become the Director of the OSC and the Founding Dean of the University's College of Optical Sciences. In 2019, the College of Optical Sciences was renamed the James C. Wyant College of Optical Sciences in his honor.

Wyant also co-founded WYKO Corporation and 4D Technology Corporation and has been a Board member for several other companies including Veeco Instruments, DMetrix, Optics 1, and ILX Lightwave. His pioneering work in the field of adaptive optics played a vital role in the development of the first adaptive optical system, and his holographic techniques, which provided a means of testing aspheric surfaces, have been a standard procedure for decades. He is also well-known for his role in creating the optical testing technique used on the James Webb Space Telescope and most, if not all, of the giant telescopes around the world.

His service to the optics community, particularly Optica, has been extensive, and includes Chair of the Long-Range Planning Committee, Editor-in-Chief of *Applied Optics*, and 2010 Optica President. He is an Optica Fellow and has received numerous awards, including Optica's Frederic Ives Medal/Jarus W. Quinn Prize.

### Esther Hoffman Beller Medal

**Harold Metcalf**, *Stony Brook University, USA*

The Beller Medal recognizes outstanding contributions to education in optical science and engineering. Metcalf is recognized for outstanding mentorship of undergraduate students in hands-on optics research and for organizing an annual symposium for students to present their work during the FiO/LS conference.

## Optica Honorary Members

The most distinguished of all Optica Member categories, Honorary Membership is awarded for unique, seminal contributions to the field of optics, and is confirmed by the Awards Council and Optica Board of Directors.



**Robert L. Byer**, *Stanford University, USA*

Byer is recognized for pioneering contributions to the scientific and technological foundations of lasers and nonlinear optics community, and leadership in academia and professional societies.

He received his M.S. and Ph.D. in applied physics from Stanford University and joined their faculty in 1969 following a role at Spectra Physics. He is currently the William R. Kenan, Jr., Professor Emeritus of Applied Physics.

Byer's work has had a major impact on laser technology. He developed the first visible, tunable red laser and helped with the development of the diode-pumped YAG laser, the most stable laser in the world, which forms the main beams of the gravitational wave-detecting instrument, LIGO. The commercialization of his work on high-energy pulsed lasers, diode-pumped solid-state lasers, and pulsed fiber lasers was key to the success of several laser technology companies.

### Max Born Award

**Marin Soljacic**, *Massachusetts Institute of Technology, USA*

The Born Award is presented to a person who has made outstanding contributions to physical optics, theoretical or experimental. Soljacic is recognized for seminal contributions to the fields of plasmonics, electromagnetism, and topological photonics.

### Michael S. Feld Biophotonics Award

**Brian T. Cunningham**, *University of Illinois at Urbana-Champaign, USA*

The Feld Award recognizes individuals for their innovative and influential contributions to the field of biophotonics, regardless of their career stage. Cunningham is honored for innovative and transformative research in optical sensing, spectroscopy, and microscopy as well as leadership and entrepreneurship in technology development of photonic crystal biosensors.

### Paul F. Forman Team Engineering Excellence Award

**Brelyon Team**, *USA*

The Forman Team Award recognizes technical achievements in optical engineering. The team is recognized for introducing the world's first headset-free virtual monitor using computational optics to program the wavefront of the light in large scale.

### Nick Holonyak Jr. Award

**Yeshaiah Fainman**, *University of California, San Diego, USA*

The Holonyak Award recognizes contributions to optics based on semiconductor-based devices and optical materials, including basic science and technological applications. Fainman is honored for pioneering contributions to nanoscale science and engineering of ultra-small, sub-micrometer semiconductor light emitters and nanolasers for information processing systems applications.

### Robert E. Hopkins Leadership Award

**Vanerlei Salvador Bagnato**, *University of São Paulo – Inst de Física de São Carlos, Brazil*

The Hopkins Award recognizes an individual or group who has had a significant impact on the global optics and photonics community or on society as a whole stemming from non-research oriented activities. It is presented to Bagnato for outstanding contributions to the global impact of optics and photonics and for promoting the field to the general public worldwide.

### Edwin Land Medal

**Susana Marcos**, *University of Rochester, USA*

The Land Medal, co-presented with the Society for Imaging Science and Technology, recognizes pioneering work empowered by scientific research to create inventions, technologies, and products. It is presented to Marcos for pioneering developments and translation of diagnostic and correction ophthalmic technologies impacting millions of patients worldwide.

### Emmett N. Leith Medal

**David Jones Brady**, *University of Arizona, USA*

The Leith Medal recognizes seminal contributions to the field of optical information processing. Brady is recognized for the invention of sparse holography.

### C. E. K. Mees Medal

**Scott Diddams**, *University of Colorado at Boulder, USA*

The Mees Medal recognizes an original use of optics across multiple fields. Diddams is recognized for pioneering innovations leading to the wide-ranging application of optical frequency combs to ultrafast lasers, optical clocks, spectroscopy, microwave synthesis, and astronomy.

### David Richardson Medal

**Turan Erdogan**, *Plymouth Grating Laboratory, Inc., USA*

The Richardson Medal recognizes significant contributions to optical engineering, primarily in the commercial and industrial sector. Erdogan is honored for numerous contributions to the commercial development of optical components and technologies through remarkable entrepreneurship and business acumen leading to products and applications in numerous areas including optical fiber systems, medical optics, and femtosecond laser technology.

### Kevin P. Thompson Optical Design Innovator Award

**Dr. Eric M. Schiesser, PhD**, *Synopsys Inc., Optical Solutions Group, USA*

The Thompson Award recognizes contributions to lens design, optical engineering, or metrology at an early career stage. It is presented to Schiesser for innovation and rigor in optical design methodology.

### Edgar D. Tillyer Award

**Andrew Watson**, *Apple Inc., USA*

The Tillyer Award recognizes distinguished work in the field of vision. It is presented to Watson for pioneering the application of computational approaches to understand foundational aspects of spatial and temporal vision as well as motion perception and their influential application in the field of image quality.

### Optica Treasurer's Award

**Stewart Wills**, *Optica, USA*

The Treasurer's Award recognizes an Optica employee who contributes significantly to organizational excellence, promotes and enacts innovative solutions, and/or exemplifies inspirational leadership. Wills is recognized for his long-term commitment to excellence in visual design, communication, and impact, for *Optics & Photonics News* and Optica as a whole.

### R. W. Wood Prize

**Alexandra Boltasseva**, *Purdue University, USA*

The Wood Prize recognizes an outstanding discovery, scientific or technical achievement, or invention in the field of optics. Boltasseva is recognized for groundbreaking contributions to the materials aspects of metamaterials, plasmonics, and nanophotonics.

The following award and medal recipients were presented this year:

#### **Stephen D. Fantone Distinguished Service Award**

**Alexander L. Gaeta**, *Columbia University, USA*

The Fantone Award recognizes outstanding service to Optica. Gaeta is honored for his role as founding editor-in chief of *Optica* and his commitment to excellence in the optics and photonics community.

#### **Joseph Fraunhofer Award/Robert M. Burley Prize**

**Xiaoyi Bao**, *University of Ottawa, Canada*

The Fraunhofer Award/Burley Prize recognizes significant research accomplishments in the field of optical engineering. Bao is honored for seminal contributions to optical fiber-based systems ranging from telecom testing protocols and instruments, to pioneering work on distributed sensor instrumentation for infrastructure monitoring, to multi-parameter sensing probes for medical imaging.

#### **Ellis R. Lippincott Award**

**Peter R. Griffiths**, *University of Idaho, USA*

The Lippincott Award, co-presented with the Coblenz Society and the Society for Applied Spectroscopy, recognizes contributions to vibrational spectroscopy. Griffiths is recognized for unique achievements and significant contributions to vibrational spectroscopy.

#### **Adolph Lomb Medal**

**William Renninger**, *University of Rochester, USA*

The Lomb Medal recognizes noteworthy contributions made to optics at an early career stage. Renninger is recognized for pioneering contributions to opto-mechanics, ultrashort pulse generation, novel fiber lasers, and multimode nonlinear optics.

#### **William F. Meggers Award**

**Stephen Schlemmer**, *Universität zu Köln, Germany*

The Meggers Award recognizes outstanding work in spectroscopy. Schlemmer is honored for pioneering ultra-sensitive action spectroscopy with fundamental applications to spectra of molecular ions, particularly CH<sub>5</sub><sup>+</sup>, and their key roles in astrochemistry.

#### **Charles Hard Townes Medal**

**Andrew Weiner**, *Purdue University, USA*

The Townes Medal recognizes contributions to quantum electronics. It is presented to Weiner for groundbreaking work bringing optical frequency combs to the quantum world and developing innovative applications spanning several fields, including coherent control, generation and line-by-line manipulation of frequency combs, and ultrabroadband radio-frequency photonics.

#### **John Tyndall Award**

**Ming-Jun Li**, *Corning Incorporated, USA*

The Tyndall Award, co-presented with the IEEE/Photonics Society, recognizes contributions to fiber optic technology. It is presented to Li for seminal contributions to advances in optical fiber technology.

#### **Herbert Walther Award**

**Rainer Blatt**, *Leopold-Franzens Universität Innsbruck, Austria*

The Walther Award, co-presented with Deutsche Physikalische Gesellschaft, recognizes distinguished contributions in quantum optics and atomic physics as well as leadership in the international scientific community. Blatt is recognized for outstanding contributions to quantum optics, quantum information science, especially quantum computing and simulation, as well as precision measurements with trapped ions; and for scientific leadership promoting quantum information and nurturing young scientists.

#### **Optica Fellows**

109 Fellows, from 24 countries, were elected in 2023 for their significant contributions to the advancement of optics and photonics through education, research, engineering, business leadership, and service. The Fellows listed below are being recognized at FiO.

View a full list of Fellows at [optica.org/2023 Fellows](https://optica.org/2023-Fellows).

**Jiun-Haw Lee**, *National Taiwan University, Taiwan*

For outstanding achievements in display technologies, particularly in improving efficiency and elongating operation lifetime of blue organic light-emitting diode

**Mircea Mujat**, *Physical Sciences Inc., USA*

For outstanding contributions to the development of high-resolution retinal imaging and retinal hemodynamics quantification technologies

#### **Diversity & Inclusion Advocacy Recognition**

Established in 2018, this program acknowledges the outstanding dedication and accomplishments of Optica members, companies, and organizations to foster greater appreciation, advancement, and celebration of diversity and inclusivity. This can be achieved through community service, professional development, hiring practices, or programming that enhances opportunities to understand and include people of diverse cultures, backgrounds, and experiences. Learn more at [optica.org/DivRec](https://optica.org/DivRec).

#### **National Encounter on Science Education for Inclusion, Colombia**

For inclusive science education initiatives, with a focus on students with disabilities, that led to the creation of accessible and impactful learning environments.

**Salah Obayya**, *Center for Photonics and Smart Materials, Zewail City of Science, Technology and Innovation, Egypt*

For his impactful leadership, rooted in equity and inclusivity, fostering diversity and empowering individuals, especially women, from diverse African backgrounds in the photonics field.

## Optica Technical Group Prizes

Optica technical groups bring together members from around the globe to help foster lasting, valuable connections. Each year over 200 Optica members volunteer their time to organize a wide range of activities to bring their community closer together. In 2020, the Board of Meetings established several prizes to recognize the outstanding work being done by our technical group volunteers. We are pleased to recognize the following groups for their efforts in 2022.

### Most Active Technical Group

Color Technical Group, Chair: Francisco Imai, *Apple Inc., USA*

### Most Information Shared

Short Wavelength Sources and Attosecond/High Field Physics Technical Group, Chair: Balázs Major, *ELI-ALPS, University of Szeged, Hungary*

### Most Popular Activity

What's Next in Integrated Photonics - Hot Topics at CLEO 2022  
Hosted by: Nanophotonics Technical Group, Chair: Sejeong Kim, *University of Melbourne, Australia* and Integrated Photonics Technical Group, Chair: Yoshi Okawachi, *Xscape Photonics Inc., USA*

### Color from Pixels to Objects

Hosted by: Color Technical Group, Chair: Francisco Imai, *Apple Inc., USA*

### Greatest Growth in Activity

Optical Fabrication and Testing Technical Group, Chair: Christopher Holmes, *University of Southampton, UK*

### Innovation Prize

Applied Spectroscopy Technical Group, Chair: Hui Min Leung, *University of Colorado at Boulder JILA, USA*

## Optica Senior Members

Congratulations to the 76 new Optica Senior Members who are recognized for their exemplary professional accomplishments in optics and photonics. The 2023 class joins a distinguished group of scientists, engineers, entrepreneurs, and innovators. View the new members at [optica.org/2023SeniorMembers](https://optica.org/2023SeniorMembers).

## Optica Foundation Honorees

Established in 2002, the Optica Foundation carries out charitable activities in support of the society's student and early career members. We cultivate the next generation of leaders and innovators as they navigate advanced degree programs and become active members of research, engineering, and business communities worldwide. The foundation also works to secure the endowments for Optica's awards and honors programs. For more information, visit [optica.org/Foundation](https://optica.org/Foundation).

## Optica Foundation Challenge

The Optica Foundation recognizes ten early-career professionals with exceptional ideas to leverage optics and photonics and address global challenges. These individuals drive new, impactful scientific discoveries with the potential to transform our world. We consider proposals for problem-solving solutions resulting from basic research and development or enhancements of photonics-based technology in three categories: Environment, Health, and Information.

Winners each receive US\$100,000 to support addressing the challenge over one to two years. The prize provides seed money for ideas that may be difficult to fund from other sources.

The 2023 winners will be announced during the Tuesday, 10 October plenary session, and 2022 winners will host symposia in each category. Check the agenda of sessions or use the app for the "Use Photonics. Change the World." symposia series.

## Kaminow Outstanding Early-Career Professional Prize

Established in 2012, this prize honors Ivan Kaminow for his many contributions to the field of optics and photonics, as well as his dedication to mentoring and inspiring early career researchers. Learn more at [optica.org/KaminowPrize](https://optica.org/KaminowPrize).

2023 Winner: **Justus C. Ndukaife**, *Vanderbilt University, USA*  
For unwavering commitment to teaching, mentoring, and community service by fostering the growth and development of students and early-career professionals within his local community and in Africa.

## Milton and Rosalind Chang Pivoting Fellowship

This fellowship provides unrestricted funding to talented, early-career optical scientists and engineers who believe their expertise can improve society outside the lab. Recipients receive funding to advance science through non-traditional career paths such as public policy, government, and journalism. Learn more at [optica.org/PivotingFellow](https://optica.org/PivotingFellow).

2023 Winner: **Fabian Ruf**, *Aarhus University, Denmark*  
For his vision and dedication to creating practical teaching tools and fostering a passion for science through optics in Liberia and other African countries, inspiring teachers and students alike.

2022 Winner: **Victor Ochoa-Gutierrez**, *University of Glasgow, UK*  
To support his transition from research to business and for his dedication to making oximetry more accessible to diverse populations.

## Stoicheff Memorial Scholarship

Established in 2011 with the Canadian Association of Physicists Foundation (CAPF), this program pays tribute to Boris P. Stoicheff, an internationally renowned laser spectroscopist and former President of OSA (1976) and CAP (1983-84). Learn more at [optica.org/Stoicheff](https://optica.org/Stoicheff).

Lin Lin, *Washington University in St. Louis, USA*

## Amplify Scholars

Established in 2022 in partnership with the Optica Foundation and the program's founding donors Thorlabs, Meta, and the Elsa Garmire & Robert H. Russell the Amplify Scholarship is awarded annually to ten Black undergraduate or graduate-level students. In addition to the funding, recipients gain access to our global network of mentors, the supporting companies, and are invited to the Amplify Optics Immersion Program during FIO/LS. Learn more about this program and this year's recipients at [optica.org/AmplifyScholarship](https://optica.org/AmplifyScholarship).

## APS/Division of Laser Science Awards and Honors

### Arthur L. Schawlow Prize in Laser Science

**Demetrios Christodoulides**, *University of Southern California, USA*

He is honored for pioneering several areas in laser sciences, among them, the fields of parity-time non-Hermitian optics, accelerating Airy waves, and discrete solitons in periodic media.

The Schawlow Prize recognizes outstanding contributions to basic research using lasers to advance our knowledge of the fundamental physical properties of materials and their interaction with light.

Christodoulides received his Ph.D. from Johns Hopkins University, USA. Prior to joining USC as an Endowed Chair Professor in the Department of Electrical and Computer Engineering, he was a postdoctoral research fellow at Bellcore, USA, and was a faculty member at Lehigh University, USA, and CREOL-The College of Optics and Photonics at the University of Central Florida, USA.

Christodoulides' contributions have been in the general field of optics and photonics. Among them is the first prediction of discrete self-trapped states in optical lattices, Bragg solitons in nonlinear gratings, vector solitons, and the development of the theory describing nonlinear optical interactions in soft matter and biological colloidal systems. His group proposed and demonstrated optical accelerating beams, which today find applications in microscopy and nonlinear optics. Most recently he has been exploring new theoretical avenues in describing the complex dynamics of highly multimode nonlinear photonic systems by means of optical thermodynamics.

He has served as an associate editor for the *IEEE Journal of Quantum Electronics* and *JOSA B*. He is a Fellow of APS and Optica and recipient of Optica's R.W. Wood Prize and Max Born Award.

### Carl E. Anderson Division of Laser Science Dissertation Award

Established in 2013, the Dissertation Award recognizes doctoral research in the area of laser science and encourages effective written and oral presentation of research results. The finalists will present their work at a special session of the Laser Science Conference, and the winner will be announced at the FiO LS Awards Ceremony.

### 2023 Carl E. Anderson Division of Laser Science Dissertation Award Finalists

**Nicholas Nardelli**

*NIST and CU Boulder, USA*

For the design, characterization, and realization of highly-stable ErYb:glass laser frequency combs for phase comparison of optical atomic clocks and the development of timescale infrastructure for redefinition of the SI second.

**Torben Purz**

*University of Michigan/Monstr Sense Technologies, USA*

For outstanding contributions to the development of multidimensional coherent imaging spectroscopy and application to the characterization of transition metal dichalcogenide monolayers and heterostructures.

**Rishabh Sahu**

*Institute of Science and Technology Austria (ISTA), Austria*

For realizing a high-cooperativity electrooptic interconnect demonstrating ultra-low noise conversion and the first observation of microwave-optical entanglement, thus laying the experimental foundations for the new field of cavity quantum electro-optics.

**Michael Tanksalvala**

*NIST Boulder Laboratories, USA*

For the development of new metrologies of materials and light, with impact on academe, industry, and national laboratories.



# Special Events

## Amplify Optics Immersion Program

Sunday, 08 October, 07:00-18:00

*Marriott Downtown Tacoma, Chambers I*

The Amplify Optics Immersion Program brings 50 Black undergraduate and master's students for an immersive program designed to highlight the research, technology and careers in optics and photonics. Participating students will attend a dedicated program and participate in FiO technical and professional development sessions and student activities.

## Student Leadership Experience

Sunday, 08 October, 07:00-18:00

*Marriott Downtown Tacoma, Chambers II*

The Optica Student Leadership Experience brings together 100 student members from around the world for a program that career trajectories, challenges faced and ideas for successfully overcoming those challenges.

## Optica Publishing Group Meet the Journal Editors

Monday, 09 October, 10:00-11:00

*Greater Tacoma Convention Center, Ballroom A Pre-Function Area, Third Floor*

Join Optica Publishing Group's journal editors for informal discussion over muffins and pastries! Bring your questions about acceptance criteria, responding to reviewers, becoming a reviewer and more. The editors welcome your queries, concerns and ideas for any of our journals. All attendees are welcome.

## The Emotionally Intelligent Manager – Using Your Heart as well as Your Head to Manage Effectively

Monday, 09 October, 11:00-12:30

*Marriott Downtown Tacoma, Tacoma Room, Second Floor*

To manage effectively, you need to engage your emotional intelligence just as much as you engage yourself cerebrally. Using both our brain and our “gut” allows us to take all human factors into account. Attend this workshop to understand:

- What emotional intelligence is
- What is YOUR emotional intelligence
- Four clusters of emotional intelligence
- Techniques for utilizing your emotional intelligence to manage even more effectively

Would you like to learn more about your emotional intelligence?

Would understanding techniques you can use every time to manage more effectively using your emotional intelligence interest you?

How about receiving a list of sample questions you can use to manage more effectively using your emotional intelligence?

Do you want to learn effective management techniques which can help you every day?

If you answered “yes” to any of these questions, then come laugh, listen and learn as Chris DeVany leads us through these important topics, key questions and answers we all need to be able to address effectively to improve our work experience, our ability to manage even more effectively and our life and interactions with team members to improve everyone's performance.

## Optica Career Fair

Monday, 09 October, 12:30-16:30

*Science + Industry Showcase, Booth 413*

Join us for the FiO LS Career Fair, where job seekers gain visibility with top companies, explore diverse opportunities and network with peers; and employers meet industry talent and enjoy promotional perks like logo placement, online listings and job postings.

Don't miss this opportunity to connect with industry professionals and advance your career.

## DEI Event Educational Outreach & Gender Equity in Pakistan

Imrana Ashraf, Quaid-i-Azam University, Pakistan

Monday, 09 October, 12:30-13:30

*Science + Industry Showcase, Booth 409*

Talks at Optica booth #409 during the FiO + LS Conference

From cutting-edge technical courses to professional development workshops- an Optica Membership has something for you at every stage of your career- from student to retiree.

DEI Event Educational Outreach & Gender Equity in Pakistan  
Imrana Ashraf, Quaid-i-Azam University, Pakistan

## Starting Point: Meet the Exhibitors

Monday, 09 October, 13:00-13:30

*Science + Industry Showcase, NextGen Lounge*

Engage with members from Optica's industry team as well as Optica Ambassadors whom will guide you through the Science + Industry Showcase. You'll meet at the NextGen Lounge to hear some tips on making your interactions with exhibitors more effective. From there, you'll break out into groups and explore.

## Optica Tech Group Meet-Up

Monday, 09 October, 13:30-14:30

*Science + Industry Showcase, Booth 409*

Talks at Optica booth #409 during the FiO + LS Conference

From cutting-edge technical courses to professional development workshops- an Optica Membership has something for you at every stage of your career- from student to retiree.

Optica Tech Group Meet-Up

## Black in Optics Meetup

Monday, 09 October, 14:15-14:45

*Science + Industry Showcase, NextGen Lounge*

This meetup is designed to support black scientists in optics and photonics. Hear from 2023 Ambassador, Joshua Burrow, Brown University, on how to maximize opportunities in the field for optimum success as a researcher.

## Managing Stress in Unprecedented Times: Ruth Rodgers

Monday, 09 October, 14:30-15:30

*Science + Industry Showcase, Booth 409*

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Managing Stress in Unprecedented Times: Ruth Rodgers

## Meet the Optica Foundation Team

Monday, 09 October, 15:00-15:30

*Science + Industry Showcase, NextGen Lounge*

Did you know that the Optica Foundation offers over 60 programs to the community each year? These opportunities include travel grants, scholarships and fellowships, and are designed to support students, early and established career professionals. Hear from members of the team who make the magic happen.



## FiO LS Awards Ceremony and Reception

Monday, 09 October, 17:30-21:00

*Museum of Glass, Invitation Only*

Recognizing and celebrating outstanding contributions to our field is an important part of the missions of APS Division of Laser Science and Optica. The ceremony will include the presentation of the 2023 Frederic Ives Medal/Jarus W. Quinn Prize, Optica Honorary Member, the Arthur L. Schawlow Prize in Laser Science, Society Fellows and other recognitions. (Invitation only.)

## Rapid Fire Lasers: Advancing Manufacturing through Light

Monday, 09 October, 19:00-20:00

*Greater Tacoma Convention Center, Room 315*

Hosted by the Lasers in Manufacturing Technical Group

Laser technology has revolutionized manufacturing processes, paving the way for unprecedented precision, efficiency and versatility. This event features rapid-fire presentations under 5 minutes from poster presenters at FiO. Attendees are welcome to vote for their favorite presentation, and an award will be given to the presenter with the highest votes at the end. Join us for an exciting round of rapid firing ideas.

## Bio-Optics Technical Groups Happy Hour

Monday, 09 October, 19:00-20:00

*Marriott Tacoma Downtown, Proctor I*

You are invited to join members of several bio-optics related Optica technical groups for a happy hour networking event on Monday evening. Jointly hosted by the Molecular Probes and Nano-bio Optics Technical Group, Tissue Imaging and Spectroscopy Technical Group and NonImaging Optical Design Technical Group, this event will provide researchers working within biomedical optics with the opportunity to meet and learn from fellow attendees in adjoining fields. RSVP at <https://bit.ly/23BioFiO> to let us know you plan to attend.

## Plenary Q&A

Tuesday, 10 October, 11:30-12:00

*Science + Industry Showcase, NextGen Lounge*

Adaptive optics is a technology used in the last decades in vision and ophthalmology. Pablo Artal, University of Murcia, will present a historical perspective of the field with emphasis in the current efforts to develop wearable devices for both vision testing and correction

## Transitioning into a Career in Optics

Tuesday, 10 October, 11:30-12:30

*Greater Tacoma Convention Center, Room 317*

Hosted by the Nonlinear Optics Technical Group

Transitioning into a career in optics can be an exciting but daunting prospect. Often, researchers are so focused on their research that they do not spend much time thinking about how their skills could translate to the workplace. This panel discussion delves into the world of nonlinear optics and explores the various career paths it can lead to. Panelists from industry, academia, government and publishing share their unique career paths and shed light on the possibilities within the field. A Q&A session closes the program.

## Tech Talk: Ilya Tkachuk Femtosecond Laser Cleaving of Polymers using a Non-Diffracting Beam

Tuesday, 10 October, 11:30-12:30

*Science + Industry Showcase, Booth 409*

Talks at Optica booth #409 during the FiO + LS Conference

From cutting-edge technical courses to professional development workshops- an Optica Membership has something for you at every stage of your career- from student to retiree.

Tech Talk: Ilya Tkachuk Femtosecond Laser Cleaving of Polymers using a Non-Diffracting Beam

## Photobiomodulation for the Brain: Current Status and Paths Forward

Tuesday, 10 October, 12:00-16:00

*Marriott Downtown Tacoma, Point Defiance, Third Floor*

Hosted by the Photobiomodulation Technical Group

Photobiomodulation is a fast-growing field of low-dose translational biophotonics that has made significant progress on multiple fronts from fundamental research in understanding mechanisms to improved technology and devices capable of precision clinical dosing. You are invited to join the Photobiomodulation Technical Group for a workshop that will showcase progress in mechanistic understanding in the field, highlight clinical evidence for applications in various human diseases and outline potential academic and commercial opportunities.

## Career Perspectives Roundtable: Academia

Tuesday, 10 October, 12:00-12:45

*Science + Industry Showcase, NextGen Lounge*

This session will provide you with multiple perspectives on academia as a career path. You'll hear from three Optica Ambassadors on their journeys, challenges, and strategies for success. Speakers include:

Mitchell Cox, University of the Witwatersrand

Mateusz Szatkowski, Wrocław University of Science and Technology

Sejeong Kim, University of Melbourne

## Quantum Systems Out-of-the-Lab: Success, Challenges and Opportunities

Tuesday, 10 October, 12:15-13:15

*Science + Industry Showcase*

This panel discusses the state and outlook of deployed quantum systems among industry leaders. There is tremendous excitement around the disruptive potential of quantum-enabled systems, from computers to sensors and from clocks to networks. While laboratory-grade prototypes teach us what is possible, the real value will come from deployed or “out-of-the-lab” devices. Results from early demonstrations and the challenges going forward will be discussed, as well as an industry perspective on timelines and opportunities. While the quantum 2.0 revolution is nascent, real-world demonstrations are happening fast, and the pace is accelerating.

**Moderator:**

*Scott Davis, CEO and Co-founder, Vescent, USA*

## Holography and Diffractive Optics Technical Group Networking Lunch

Tuesday, 10 October, 13:00-14:00

*Marriott Downtown Tacoma, Proctor I Room, Third Floor*

Hosted by the Holography and Diffractive Optics Technical Group Members of this technical group are invited to attend a networking lunch. The event will provide an opportunity to connect with fellow attendees who share an interest in this field and to learn more about this technical group.

## Asians in Optics Meetup

Tuesday, 10 October, 13:00-13:30

*Science + Industry Showcase, NextGen Lounge*

This meetup is designed to support Asian scientists in optics and photonics. Hear from 2022 Ambassador, Sangyeon (Fred) Cho, Massachusetts General Hospital, on how to maximize opportunities in the field for optimum success as a researcher.

## What Chatbots Mean for Scientific Publishing

Tuesday, 10 October, 13:45-14:30

*Science + Industry Showcase Theater*

ChatGPT triggered a conversation around increasingly intelligent chatbots based on large-language models and the potential impact on society — good or bad. But what do they mean for scientific publishing?

This panel brings together Optica Publishing Group editors, authors and reviewers to discuss the use of chatbots and other generative AI tools for writing research articles, peer review, publishing and new standards for accountability.

Join the conversation on this important and evolving topic.

## Career Perspectives Roundtable: Nonprofit & Government

Tuesday, 10 October, 13:45-14:30

*Science + Industry Showcase, NextGen Lounge*

This session will provide you with multiple perspectives on nonprofit and government agencies as a career path. You'll hear from Optica Ambassadors, AJ Fleisher, NIST and Matthew Posner.

## Tech Talk: Eugene Sokalau System-aware PIC Design for LiDAR, Quantum, and Telecom

Tuesday, 10 October, 14:30-15:30

*Science + Industry Showcase, Booth 409*

Talks at Optica booth #409 during the FiO + LS Conference

From cutting-edge technical courses to professional development workshops- an Optica Membership has something for you at every stage of your career- from student to retiree.

Tech Talk: Ilya Tkachuk Femtosecond Laser Cleaving of Polymers using a Non-Diffracting Beam

## State of the Industry

Tuesday, 10 October, 14:45-15:30

*Science + Industry Showcase Theater*

Join an insightful discussion about the present and future of the laser industry. Panelists discuss the recent state of the laser industry and where it is going. What are the hot technologies? Are there gaps in the technology that could accelerate deployment? Are there still supply chain issues holding up production? How is the slowdown in the Chinese economy impacting laser suppliers? And where can the industry look for growth, either in applications or new customers?

Moderator:

Amy Eskilson, *President and CEO, Inrad Optics, USA*

## Career Perspectives Roundtable: Industry

Tuesday, 10 October, 14:45-15:30

*Science + Industry Showcase Theater, NextGen Lounge*

In our final session of this series, you will hear multiple perspectives on industry as a career path. You'll hear from three Optica Ambassadors on their journeys, challenges, and strategies for success. Benjamin Cromey, Ball Aerospace.

## FiO LS Conference Reception

Tuesday, 10 October, 18:30-21:00

*Greater Tacoma Convention Center, Exhibit Hall Pre-Function Area*

Please join us to meet or reconnect with friends, colleagues and fellow attendees.

## Plenary Q&A

Wednesday, 11 October, 11:30-12:00

*Science + Industry Showcase, NextGen Lounge*

Following her Plenary talk, Karen Trentelman, Getty Conservation Institute, will discuss The scientific analysis of works of art is carried out to answer questions related to artist's technique, provenance, historic technologies, and material properties. Utilizing primarily non-invasive imaging and spectroscopic techniques, studies on objects ranging from mummies to Medieval manuscripts to paintings by masters such as Rembrandt and van Gogh will be presented.

The Plenary will occur from 10:30 – 11:30 but Q&A will happen back at the NextGen Lounge from 11:30 – 12:00.

## Tech Talk: Ilirjana Anna Sino Toptani Mariani, Ph.D. Laser Induced Breakdown Spectroscopy

Wednesday, 11 October, 11:30-12:30

*Science + Industry Showcase, Booth 409*

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Tech Talk: Ilirjana Anna Sino Toptani Mariani, Ph.D. Laser Induced Breakdown Spectroscopy

## Tech Talk: Jun Shan Wey Distinguished Engineer on the Technology Strategy, Architecture, and Planning team at Verizon

Wednesday, 11 October, 12:30-13:30

*Science + Industry Showcase, Booth 409*

Talks at Optica booth #409 during the FiO + LS Conference

From cutting-edge technical courses to professional development workshops- an Optica Membership has something for you at every stage of your career- from student to retiree.

Tech Talk: Jun Shan Wey Distinguished Engineer on the Technology Strategy, Architecture, and Planning team at Verizon

## Optica President Meet and Greet

Wednesday, 11 October, 13:00-13:30

*Science + Industry Showcase, NextGen Lounge*

Michal Lipson, Columbia, is the Eugene Higgins Professor of Electrical Engineering and Professor of Applied Physics at Columbia University. Lipson pioneered critical building blocks in the field of Silicon Photonics, which today is recognized as one of the most promising directions for solving the major bottlenecks in microelectronics. Come and hear from the current Optica President on her journey in optics and the steps she took along the way.

## Tech Talk: Di Xu, Camera optics miniaturization towards form factor AR

Wednesday, 11 October, 14:30-15:30

*Science + Industry Showcase, Booth 409*

Talks at Optica booth #409 during the FiO + LS Conference

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Tech Talk: Di Xu, Camera optics miniaturization towards form factor AR

## How to Avoid Common Mistakes in Patent and Trade Secret Laws

Wednesday, 11 October, 13:45-14:30

*Science + Industry Showcase Theater*

Discover the important role that patent and trade secret protections play for optics and photonics in the United States and abroad. The session covers the global landscape of patent laws and trade secrets that researchers, scientists and organizations face when considering options for safeguarding their research, inventions and discoveries.

## Interviewing 101

Wednesday, 11 October, 13:45-14:30

*Science + Industry Showcase, NextGen Lounge*

Are you a student entering the job market? Are you a career professional looking for tips on improving your ability to land a position? Check out this session as 2023 Optica Ambassador, Atrouli Chatterjee, Yale University, walks through strategies to help you ace that interview.

## Outreach on a Tight Budget

Wednesday, 11 October, 14:45-15:30

*Science + Industry Showcase, NextGen Lounge*

Are you a student, member of a student chapter, or someone looking to impact your local community through science education? Do you find yourself challenged by not having the resources you feel you need to accomplish this effectively? Look no further as **Perla Viera Gonzalez**, Universidad Autonoma de Nuevo Leon, an expert in community impact, highlights methods to showcase the powers and principles of optics with limited funds.

## Movie Night – The Hunt for Planet B

Wednesday, 11 October, 19:30-21:00

*Greater Tacoma Convention Center, Room 405*

Join us for some popcorn, beer and a movie.

The Hunt for Planet B captures the human drama behind NASA's high-stakes Webb Telescope which launched on December 25, 2021. The film interweaves the creation of this massive machine - the most ambitious space observatory ever built - with the story of a pioneering group of female scientists on a quest to find life beyond our solar system. What begins as a real-time scientific adventure turns into a deep meditation on our place in the universe. On the brink of seeing farther out than ever before, we find ourselves looking back at our own imperiled planet with new eyes.

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