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Please refer to the Online Schedule at https://www.frontiersinoptics.com/home/schedule, or refer to the Conference app for regular updates.

Conference Schedule-at-a-Glance

Note: Dates and times are subject to change. Check the conference app for regular updates. All times reflect EDT.

	Monday 17 October	Tuesday 18 October	Wednesday 19 October	Thursday 20 October
GENERAL				
Registration	07:00–16:30	07:00–18:30	07:30–17:30	07:30–10:30
Optica Member Lounge	09:00–17:00	09:00–17:00	09:00–17:00	09:00–13:00
PROGRAMMING				
Technical Sessions	08:00–09:00 10:30–12:30 14:00–15:30 16:00–18:00	08:00–09:00 15:30–17:00	08:00–09:00 15:30–17:00 17:30–19:00	08:00–19:00 10:30–12:30
Visionary Presentations	09:15–10:00	09:15–10:00	09:15–10:00	09:15–10:00
LS Symposium on Undergraduate Research	12:00–18:00			
Plenary Sessions and Plenary Q&A		10:30–11:30 11:30–12:00	10:30–11:30 11:30–12:00	
Poster Sessions (in-person and virtual)		11:30–13:00 14:00–15:30	11:30–13:00 14:00–15:30	
Postdeadline Paper Sessions		17:30–19:00		
SCIENCE + INDUSTRY SHOWCASE				
Science + Industry Showcase (includes lunch and continuous programming in the Theater)		10:00–15:30	10:00–15:30	
SPECIAL EVENTS				
Mid-Manager Summit (Invitation Only)	08:00–18:00			
Optica Publishing Group's Meet the Journal Editors	10:00–11:00			
Optica Non-Imaging Optical Design Technical Group Networking Event (RSVP Required)	12:30–13:30			
Optica Display Technology Technical Group Networking Event (RSVP Required)	18:00–19:00			
Awards & Honors Ceremony & Reception (invitation only)	18:30 –21:00			
Speed Networking for Spectroscopy Enthusiasts (RSVP Required)		12:00–13:00		
Recent Advances in Laser Technology and Applications in Manufacturing (RSVP Required)		12:00–13:00		
Optical Membership "See Yourself in Optica" Mixer		13:00–14:00		
Optica Display Technology Technical Group Special Talk (RSVP Required)		17:00–18:00		
DLS Business Meeting		17:15–18:15		
Optica Annual Business Meeting		17:30–18:15		
Conference Reception		18:30–21:00		
Luminate Finals 2022			12:15–14:30	
End User Workshop			14:30–17:30	
A Day in the Life of an Industrial Scientist from Early to Late Career			19:30–20:30	
Movie Night--Picture a Scientist			19:30–21:00)	

General Information

Registration

Galleria (Street Level)

Sunday, 16 October	14:00–17:00
Monday, 17 October	07:00–16:30
Tuesday, 18 October	07:00–18:30
Wednesday, 19 October	07:30–17:30
Thursday, 20 October	07:30–10:30

First Aid and Emergency Information

In the event of an emergency at the Rochester Riverside Convention Center, please contact staff at the Information Desk or dial 911 on your mobile phone.

Lost and Found

For lost or found items please check first at the conference registration desk. Please put your name on all conference materials (including your Conference Program), as they will only be replaced for a fee.

The Optica Publishing Group Platform

ZIP files of the Technical Digest papers can be downloaded at once by selecting the Technical Digest button on the frontiersinoptics.com landing page. You will need to log in with your registration email and password to access these files; organizational subscribers are not able to view these files at this time. Technical papers that are presented at the conference by technical registrants will be formally published (accessible to subscribers) about two months after the conference.

The OPG platform is a cutting-edge repository that contains Optica's content, including 18 flagship, partnered and co-published peer reviewed journals and one magazine. With more than 370,000 articles including papers from over 700 conferences, the Optica Publishing Group platform is the largest peer-reviewed collection of optics and photonics.

Conference App

Manage your conference experience by downloading the Conference App to your smartphone or tablet

Download the app in any of these three ways:

1. Visit www.frontiersinoptics.com/app
2. Search for 'Optica Events' in your preferred app store
3. Scan the QR code below

Schedule

Search for conference presentations by day, topic, speaker or program type. Plan your schedule by setting bookmarks on programs of interest. Technical attendees can access technical papers within session descriptions.

Science & Industry Showcase

Search for exhibitors or view the complete list. Bookmark exhibitors as a reminder to stop by their booth. Tap on the map icon within a description, to find their location on the show floor map.

Access Technical Digest Papers

Full technical registrants can navigate directly to the technical papers right from the Conference App.

Locate the session or talk in "Schedule" and click on the "Download PDF" link that appears in the description.

IMPORTANT: You will need to log in with your registration email and password to access the technical papers. Access is limited to Full Conference attendees only.

Need assistance?

Contact our support team, available 24 hours a day Monday through Friday, and from 09:00 to 21:00 EDT on weekends, at +1.888.889.3069 option 1.

Join the Social Conversation at FiO + LS!

We will be tweeting about program highlights and the latest updates throughout the conference. Follow @OpticaWorldwide on Twitter and tweet about your conference experience using #FiO22, and be sure to mention @OpticaWorldwide in your tweets. Join the conversation.

Diversity + Inclusion

Special Needs

If you have any special needs or require special accommodations to fully participate in this conference, please contact Conference Management at the registration desk. Staff will make every effort to accommodate reasonable requests we receive on-site.

All Gender Restroom

An all gender restroom designation means this restroom is open and safe for people of all gender identities and expressions. The conference all gender restroom is clearly marked in the North Hall Show Office on the Exhibit level.

Optica Code of Conduct & Anti-Harassment Policy

It is the policy of Optica that all forms of bullying, discrimination, and harassment, sexual or otherwise, are prohibited in any Optica events or activities. Harassment consists of unwanted, unwelcomed and uninvited behavior that demeans, threatens or offends another. This policy applies to every individual at the event, whether attendee, speaker, exhibitor, award recipient, staff, contractor or other. For complete information visit optica.org/CodeofConduct. If you wish to report bullying, discrimination, or harassment you have witnessed or experienced, you may do so through the following methods:

- contact any Optica staff member
- use the online portal optica.org/IncidentReport
- or email CodeOfConduct@Optica.org

Amplify Optics Immersion Program

Saturday, 15 October–Tuesday, 18 October

This program will host 50 Black Undergraduate or Master's level physics, chemistry, biology and engineering students interested in learning more about light, light-based technologies and career opportunities. The students will hear from renowned speakers with the goal of sparking their interest in optics and photonics.

Learn more: optica.org/Amplify_Immersion

Plenary & Visionary Speakers

Scott Acton
Scientist, Ball Aerospace & Technologies, USA

Peddling a Telescope: Reflections on Aligning the Webb Telescope, and Cycling the World

Acton will step attendees through the alignment and phasing of the Webb Telescope, and share some of his adventures experienced while attempting to cycle around the world to promote the telescope.

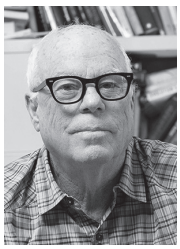
About the Speaker: Scott Acton is the Wavefront Sensing and Controls Scientist for JWST, and a staff consultant at Ball Aerospace and Technologies Corp., where he has worked for the past 20 years. Previously, Acton worked in the field of Adaptive Optics for the W.M. Keck Observatory, and for the Lockheed Missiles and Space Co. Acton studied Physics at Abilene Christian University, earned a PhD in Physics from Texas Tech, and served as a post-doc at the Kiepenheuer-Institut fuer Sonnenphysik in Germany. In 2016, Acton took a year off from his job to execute the "James Webb Space Telescope World Bicycle Tour." He currently resides in Niwot, Colorado.

Monika Ritsch-Marte
Director of the Institute of Biomedical Physics, Medical University of Innsbruck, Austria

Opportunities in Optical Imaging by Wavefront Shaping with Spatial Light Modulators

Liquid crystal spatial light modulators (SLMs) provide a wealth of opportunities to extend optical imaging. Used as a programmable Fourier filter, an SLM can emulate various microscopy techniques. SLMs allow for multiplexing the image into sub-images showing different modalities (brightfield, darkfield, phase contrast), or customized parameter settings, or different depths inside the sample. Wavefront correction with SLMs also advances the imaging depth in strongly scattering brain tissue.

About the Speaker: Monika Ritsch-Marte received her M.Sc. in Physics from the University of Innsbruck in 1984 and her PhD in Quantum Optics from the Waikato University in New Zealand (under the supervision of D.F. Walls) in 1988. After several PostDoc projects (Boulder, Milano, Helsinki), in 1998 she became professor of Biomedical Physics in Innsbruck where, together with her colleague Stefan Bernet, she founded the Biomedical Optics group. Her research interests include holographic optical tweezers, phase microscopy and linear and non-linear Raman microscopy. In particular, her group is internationally known for innovative applications of wavefront shaping with liquid-crystal SLMs. Ritsch-Marte has received numerous research grants and awards, such as an ERC Advanced Grant and the Boltzmann Award of the Austrian Physical Society. She is a member of the Austrian Academy of Science, the German Academy Leopoldina and a Fellow of Optica.



Marty Banks
Professor of Optometry and Vision Science, University of California, Berkeley, USA

Kimberly Budil
Laboratory Director, Lawerence Livermore National Laboratory, USA

Mercedes Gimeno-Segovia
Vice President, System Architecture, PsiQuantum, USA

Tony Heinz
Professor of Applied Physics and Photon Science, Stanford University, USA

Demetri Psaltis
Professor of Optics, Director of the Optics Laboratory, EPFL, Switzerland

Marie Spiropulu
Shang-Yi Ch'en Professor of Physics, Calfornia Insitute of Technology, USA

Frank Wise
Samuel B. Eckert Professor of Engineering, School of Applied and Engineering Physics, Cornell University, USA

Science + Industry Showcase

Tuesday, 18 October, 10:00–15:30
Wednesday, 19 October, 10:00–15:30

The FiO LS Science + Industry Showcase hosts exhibiting companies partnered with innovative demonstrations, networking events, poster presentations, and industry programming. Learn about new products, find technical and business solutions, and gain the most up- to-date market perspective of your industry. Don't miss this opportunity to visit companies representing a broad range of the best products and applications in the optics and photonics industry. There is no charge to attend the Showcase – it is open to all registered attendees!

Poster Sessions

Tuesday, 18 October, 11:30-13:00, 14:00-15:30
Wednesday, 19 October, 11:30-13:00, 14:00-15:30

Attend the Poster Sessions and view more than 600 posters scheduled for presentation. Poster presentations communicate new research findings in an intimate setting that encourages lively and detailed discussion between presenters and attendees.

All posters are displayed on the conference website in an ePoster Gallery with search features by keyword, speaker, and final ID and filtered by track or day. All poster presenters (regardless of whether presenting onsite or remotely) are encouraged to submit their poster presentation PDF as well as a short 3-minute preview of their poster. You can access these by selecting an individual poster, and use the embedded chat feature through Slack to engage with virtual poster presenters.

Science & Industry Showcase Theater

Tuesday, 18 October	
10:30 –11:30	Plenary Presentation: Scott Acton Peddling a Telescope: Reflections on Aligning the Webb Telescope, and Cycling the World
11:30–12:00	Plenary Plus – Q&A with Scott Action
12:15–13:15	Adding More Degrees of Freedom to Optical Design Through Novel Optical Materials and Fabrication Methods
13:30–14:15	Commercializing Meta-Optics: Applications, New Opportunities and Challenges
14:30–14:50	Technology Showcase: Deployable Optical Frequency Combs and Laser Modules for Next-Generation Quantum Sensors presented by: Vescent Photonics, Inc.
15:00–15:45	The Challenges of Optical Testing the Webb Telescope on Earth and Applications for the Roman Telescope

Wednesday, 19 October	
10:30 –11:30	Plenary Presentation: Monika Ritsch-Marte
11:30–12:00	Plenary Plus – Q&A with Monika Ritsch-Marte
12:15–13:00	Panel on New Government Programs and Funding Opportunities
13:10–13:55	Diversity Panel Women in Optics: Challenges in Optics and Photonics Careers - Thriving at All Levels
14:00–14:20	Special Presentation: U.S. Representative Joe Morelle
14:30–15:30	Challenges of PIC Packaging for Power-Efficient High-Speed Optical Communications

Tuesday, 18 October

Plenary Plus - Q&A with Scott Acton

Immediately following the Plenary Session, join the conference chairs as they moderate a Q&A discussion with speaker Scott Acton, Ball Aerospace & Technologies, USA. The 30-minute program provides attendees with an opportunity to delve deeper into their curiosities about the James Webb Space Telescope.

Adding More Degrees of Freedom to Optical Design Through Novel Optical Materials and Fabrication Methods

Moderator: Jessica DeGroote Nelson, *Senior Director of Optical Product Development, Edmond Optics, USA*

If we look back at advances in optical materials and fabrication methods over the past 20 years, we can see how first aspheres and then off-axis freeforms allowed for more degrees of freedom in optical design. The expert panelists in this roundtable discussion will answer your questions about future possibilities for the next generation of optical materials and fabrication processes adding even more degrees of freedom through advances in technologies, such as gradient index materials, meta-surfaces, textured surfaces, laser processing, and additive manufacturing.

Panelists include:

Nathan Carlie, *Edmund Optics, USA*

Daniel Nikolov, *University of Rochester, USA*

Rebecca Dylla-Spears, *Lawrence Livermore National Lab., USA*

Commercializing Meta-Optics: Applications, New Opportunities and Challenges

Meta-optics are planar optical elements comprised of subwavelength nanostructures. By precisely engineering the scattering properties of these nanostructures, meta-optics provide unprecedented control over electromagnetic radiation with a single layer of mater, creating the opportunity to greatly reduce the size and complexity of existing optical systems, while also providing new functionality to optical modules. Given their planar nature and simple construction, meta-optics enable the large-scale mass production of optics in existing semiconfuctor foundries for the first time. This panel will discuss the path of meta-optics from lab-scale demonstrations to the first commercial applications. It will also explore new opportunities within the field and remaining challenges for widespread adoption.

Moderator: Rob Devlin, *CEO, Co-Founder, Metalenz, Inc., USA*

Technology Showcase: Deployable Optical Frequency Combs and Laser Modules for Next-Generation Quantum Sensors

Speaker: *Kevin Knabe, Ph.D., Director of R&D*

Optical frequency combs have been instrumental in the fields of optical atomic clocks, low phase noise microwave generation, precision LIDAR, and dual comb spectroscopy. Vescent will discuss new designs for fieldable, low-SWaP optical frequency combs and other useful laser modules aimed at deployable quantum sensors.

Presented by VESCENT

The Challenges of Optical Testing the Webb Telescope on Earth and Applications for the Roman Telescope

Presenter: Tony Whitman, *Space & Airborne Systems, L3 Harris Technologies, USA*

The alignment process and optical performance of the Webb Telescope was tested on the ground with the challenges of achieving 20 Kelvin temperatures and measuring a very light weighted telescope distorted by gravity during Hurricane Harvey. That experience is helping build NASA's Roman Space Telescope to achieve new planet finding capabilities and better understand the mysteries of dark matter and dark energy.

Wednesday, 19 October

Plenary Plus - Q&A with Monika Ritsch-Marte

After Plenary Session II concludes, speaker Monika Ritsch-Marte, Medical University of Innsbruck, Austria, will participate in an extended Q&A session moderated by the conference chairs. The 30-minute program provides attendees with an opportunity to explore in greater detail her talk on wavefront shaping with liquid crystal spatial light modulators (SLMs).

Panel on New Government Programs and Funding Opportunities

Moderator: Edward White, *AIM Photonics, USA*

Women in Optics: Challenges in Optics and Photonics Careers - Thriving at All Levels

Join Optica Ambassadors Linhu Yu & Maria Viñas Peña for a career development discussion with some of the Optica female luminaries on challenges professionals face in optics and photonics careers. The event's second half will be a networking session for attendees in the Optica Foundation 20th Anniversary NexGen Lounge. All are welcome.

Special Presentation: U.S. Representative Joe Morelle

U.S. Representative Joe Morelle (D-NY), who represents the Rochester, New York region in the U.S. Congress, will make special remarks about the role of optics in growing America's position as a global leader in innovation.

Challenges of PIC Packaging for Power-Efficient High-Speed Optical Communications

Organizers: Thomas Brown, *University of Rochester, USA;* Turan Erdogan, *Plymouth Grating Laboratory, Inc., USA;* Alex Turukhin, *Cisco, USA*

Photonics packaging, particularly the test, assembly, and packaging of photonic integrated circuits and systems, remains one of the most technically challenging and expensive steps in prototyping and manufacturing photonic integrated circuits. This session will include speakers describing some of the biggest challenges and discussing a range of solutions that show promise for improving our ability to have scalable manufacturing processes and tools for PICs and PIC Applications. These include traditional telecom applications and low-cost biosensors, PICs for quantum technology, and photonics for precision metrology and spectroscopy. Topics will include:

- Novel Solutions to fiber attach
- Advances in PIC testing and metrology
- Pluggable solutions for light coupling
- Design, manufacture, and testing of PIC-based biosensors
- Proposals of design standards for PIC packaging

APS Booth

Booth 208

The American Physical Society (APS) is a non-profit membership organization working to advance and diffuse the knowledge of physics through its outstanding research journals, scientific meetings, education and diversity programs, outreach, advocacy, and international activities.

APS represents over 54,000 members, including physicists in academia, national laboratories, and industry in the United States and throughout the world. Please stop by our booth to learn more about APS programs, services, and our new fully open access broad scope journal *Physical Review Research*.

Meet the Editors of *Physical Review*

Tuesday, 18 October, 14:00–15:30
Coffee Break area near APS booth

The Editors of the *Physical Review* journals invite you to join them for conversation on Tuesday, October 18, 14:00–15:30. The Editors will be available to answer questions, hear your ideas, and discuss any comments about the journals. All are welcome. Light refreshments will be served.

Optica Foundation 20th Anniversary NextGen Lounge

Booth 1001

Check out the NextGen Lounge for student members. This professional development focused space will feature topics ranging from entrepreneurship, inclusivity in physics, storytelling techniques for scientific talks, and advice for transitioning to academia and industry. The schedule and full details are located at optica.org/nextgenlounge.

Exhibit Buyers' Guide

(as of 23 September 2022)

Attendees should visit the Conference App to access exhibiting companies' detailed information.

AIM Photonics www.aimphotonics.com	Booth 1502
American Institute of Physics www.aip.org	Booth 1310
Apre Instruments Inc. www.apre-inst.com	Kiosk 1417
Axiom Optics www.axiomoptics.com	Booth 1303
Energetiq Technology www.energetiq.com	Booth 1317
GS Plastic Optics, Inc. www.gsoptics.com	Booth 1401
Hamamatsu Corporation www.hamamatsu.com	Booth 1503
JML Optical Industries, Inc. www.jmloptical.com	Booth 1301, Sponsor
Liquid Instruments www.liquidinstruments.com	Booth 1501
Luminate www.nextcorps.org	Booth 1403, 1500, Sponsor
Menlo Systems Inc. www.menlosystems.com	Kiosk 1614
National Society of Black Physicists, Inc. (NSBP) www.nsbp.org	Booth 1308
NKT Photonics www.nktphotonics.com	Booth 1400
Optica www.optica.org	Booth 1407
Optical Perspectives Group, LLC www.optiper.com	Kiosk 1516
Optimax Systems, Inc. www.optimaxsi.com	Booth 1600
Santec USA Corporation www.santec.com	Kiosk 1514
TOPTICA Photonics www.toptica.com	Booth 1601
UltraFast Innovations GmbH www.ultrafast-innovations.com	Booth 1314
Vescent Photonics, Inc. www.vescent.com	Booth 1306, Sponsor
VIAVI Solutions www.viavisolutions.com	Kiosk 1415
VPIphotonics www.vpiphotonics.com	Booth 1602

Optica Member Lounge Events

Optica Member Lounge

Galleria (Street Level)

Sunday, 16 October	09:00–17:00
Monday, 17 October	09:00–17:00
Tuesday, 18 October	09:00–17:00
Wednesday, 19 October	09:00–17:00
Thursday, 20 October	09:00–13:00

Optica Store Showcase

Optica provides quality information and inspiring interactions that power achievements in the science of light through its world-renowned publications, meetings, and membership programs. More than 22,000 members, residing in over 100 countries and spanning academic, government, and industry, call Optica their professional home.

All attendees are invited to stop by the Optica Member Lounge to meet Optica staff, learn more about our publications, conferences and meetings, and learn about membership for individuals and companies. **Not a member?** Definitely stop by and learn more about Optica! All conference attendees who join or renew as an Individual 1-year member will receive **50% off the cost of annual dues.**

Optica Member Lounge Programs

Monday, 17 October

Optica Publishing Group's Meet the Journal Editors
10:00–11:00
Join Optica Publishing Group's journal editors for an informal discussion over donuts! 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!

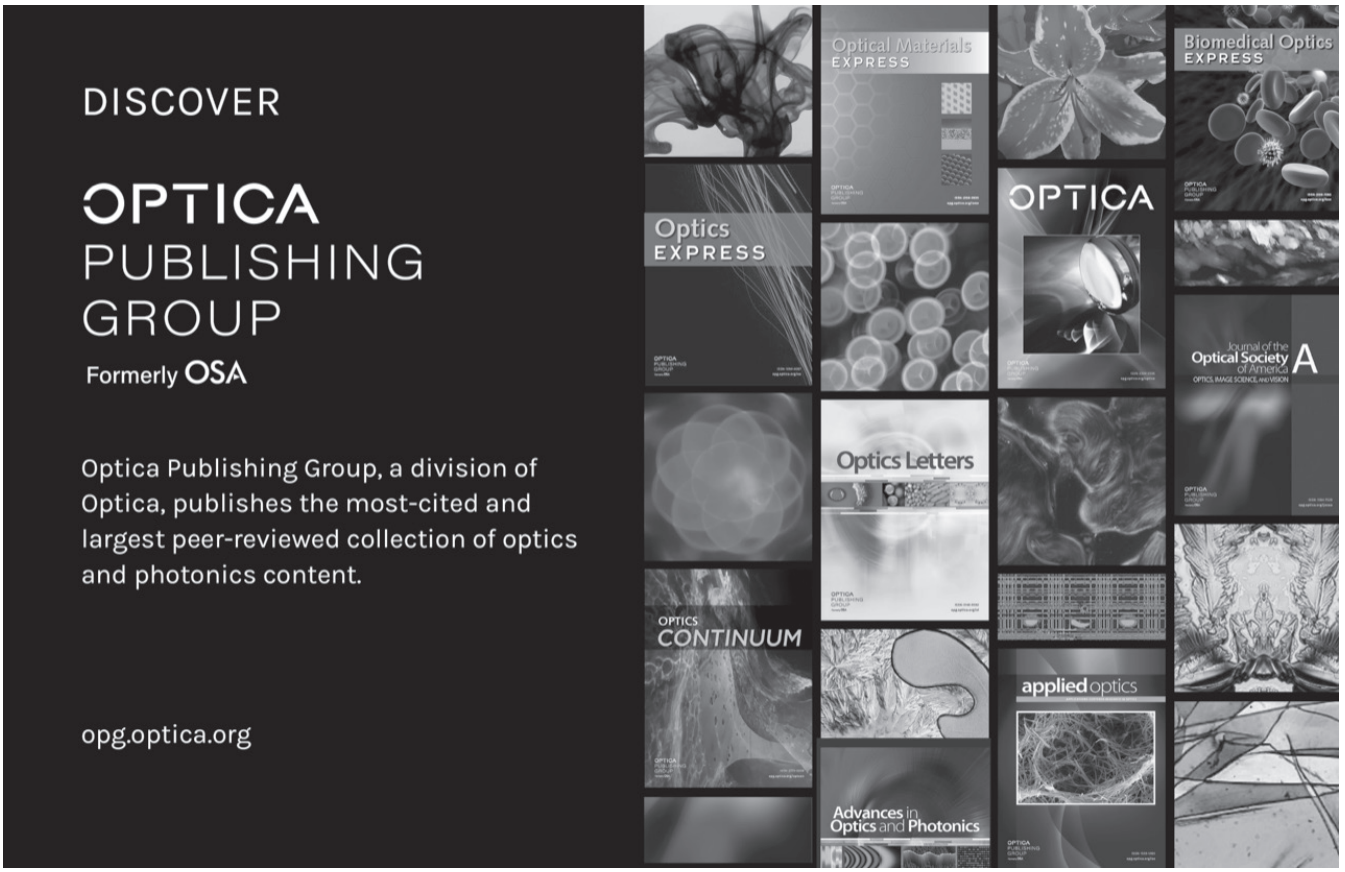
Tuesday, 18 October

Optica Membership "See Yourself in Optica" Mixer
13:00–14:00
Stop by the lounge to learn about the benefits you would receive by becoming an Optica member. There will also be a raffle giveaway on both Tuesday and Wednesday. Winners will be announced in the Science + Industry Showcase during the afternoon poster sessions.

Optica Raffle Giveaway (winners selected)
15:30–16:30

Wednesday, 19 October

Optica Raffle Giveaway (winners selected)
15:30–16:30



Special Events

Laser Systems Technical Group Campfire Session

Sunday, 16 October, 16:30–17:30
Hyatt Regency Rochester – Regency Ballroom C

You are invited to join the Optica Technical Group on Laser Systems for a campfire session featuring Dr. Gregory Quarles, CEO, President and Board member for Tucson-based Applied Energetics, Inc. The campfire session will start with Dr. Quarles' talk "From Laser Materials to Ultrashort Pulse Lasers and Applications - An Overview of 40 years as an Optica Member." After the talk, the remainder of the session will be open for discussion with Dr. Quarles so come with your thoughts and questions ready.

Presented by OPTICA Advancing Optics and Photonics Worldwide Laser Systems

Mid-Manager Summit

Monday, 17 October, 08:00–18:00
Hyatt Regency Rochester – Grand Ballroom A
Invitation Only and In Person

Leading with Intention in Today's Hybrid Environment.

The summit will offer mid-level professionals an opportunity to enhance and develop their leadership skills, relationships, and effectiveness to distinguish them in their professions and enable them to make more meaningful contributions to their teams. The program is for individuals with at least five years of experience as full-time professionals looking to move into Vice President or Chief Executive Officer positions in the next 3-5 years. Eligible participants are middle managers and those identified as having high organizational potential. RSVP is required to attend. Email Albert Williams at awilliams@optica.org to check eligibility or to RSVP.

Participants will have the opportunity to learn from CEOs, mentors, and guest speakers and engage in group discussions, problem-solving, and other activities to enhance management skills. Topics included: neuroleadership, managing at multiple levels, navigating organizational cultures, effective communication and conversations, career planning, professional development, networking, and personal branding. Participants will leave with strategies and skills to make an impact when they return to their organization.

LS Symposium on Undergraduate Research

Monday, 17 October, 12:00–18:00
Lilac Ballroom

Organizers: Samir Bali, *Miami University of Ohio, USA*, and Harold Metcalf, *Stony Brook University, USA*

The Symposium on Undergraduate research has been a feature of the annual meeting of the Division of Laser Science of the American Physical Society (APS-DLS) for sixteen years, and has showcased the research of more than 500 students during that time. Students' presentations often describe their work during the previous summer. The NSF has played a vital role by providing the research opportunities for many of the students through its REU programs, as well as by direct support of the event. The symposium has been generously supported by the DLS, Optica, NSF, SPS, and Univ. MD (JQI), along with corporate sponsors Thorlabs, Photonics Industries, East Coast Optical Technologies, and Bristol Instruments.

Optica Non-Imaging Optical Design Technical Group Networking Event

Monday, 17 October, 12:30–13:30
Cascade D/E/F

Members of the Optica Technical Group on Nonimaging Optical Design are invited to join us for a networking event on Monday. 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.

Presented by OPTICA Advancing Optics and Photonics Worldwide NonImaging Optical Design

Optica Display Technology Technical Group Networking Event

Monday, 17 October, 18:00–19:00
Cascade D/E/F

Members of the Optica Technical Group on Display Technology are invited to join us for a networking event on Monday evening. 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.

Presented by OPTICA Advancing Optics and Photonics Worldwide Display Technology

Awards Ceremony and Reception

Monday, 17 October, 18:30–21:00
Memorial Art Gallery (shuttles provided)
Invitation Only

Recognizing and celebrating outstanding contributions to our field is an important part of the mission's of Optica and APS/Division of Laser Science. The program will include the presentation of the 2022 Frederic Ives Medal/Jarus W. Quinn Prize, Optica Honorary Members, the 2022 Arthur L. Schawlow Prize in Laser Science, society Fellows, and other recognitions.

Speed Networking for Spectroscopy Enthusiasts

Tuesday, 18 October, 12:00–13:00
Cascade D/E/F

The Optica Technical Group on Applied Spectroscopy invites spectroscopy enthusiasts to join them for a fun networking event on Tuesday. The event will start with a round of speed networking, allowing attendees from different branches of spectroscopy to connect one-on-one in short meetings. We'll then break for lunch and attendees will have a chance to chat freely with colleagues.

RSVP required.

Presented by OPTICA Advancing Optics and Photonics Worldwide | Applied Spectroscopy

Recent Advances in Laser Technology and Applications in Manufacturing

Tuesday, 18 October, 12:00–13:00
Highland E/F

You are invited to join the Optica Technical Group on Lasers in Manufacturing for a panel discussion exploring recent advances in laser technology and applications in manufacturing. Among the topics our panelists will discuss will be macro processing, micro processing, and additive manufacturing.

Presented by OPTICA Advancing Optics and Photonics Worldwide | Lasers in Manufacturing

Optica Display Technology Technical Group Special Talk

Tuesday, 18 October, 17:00–18:00
Highland E/F

You are invited to join the Optica Technical Group on Display Technology for a special talk on Tuesday afternoon. Our featured presenter will give a talk on their research, which will be followed by a moderated question and answer session.

Conference Reception

Tuesday, 18 October, 18:30–21:00
Lilac Ballroom

Celebrating 20 years of the Optica Foundation.

Join us to celebrate the 20th anniversary of the donor-driven support of the next generation of optics and photonics.

2022 Luminate Awards

Wednesday, 19 October, 12:15-14:30
Lilac Ballroom

Startups from around the world will be introducing emerging technologies and pitching for up to $2 million in follow-on funding at Luminate finals 2022. The event features a close look at innovations destined to transform aerospace, manufacturing, healthcare, and other fields – plus, the insight of keynote speaker, renowned physicist Michal Lipson. Cast your vote for your favorite startup during the event to help them take home the Audience Choice Award (and $10,000 cash). Register to join the free event in person or online.

RSVP required.

End User Workshop

Wednesday, 19 October, 14:30 – 17:30
Cascade D/E/F

Optica's corporate membership program will host a session featuring companies' supply chain managers or business developers to share some of their demands from the optics and laser industry. They will briefly address the optics and laser technologies they currently use, those they need now or in the near future, and technology challenges that others in the room could help solve.

With this industry-only event, we hope to stimulate discussions that will accelerate business opportunities for everyone in the room. The event will not be recorded to encourage people to speak freely. We know that many companies attending Frontiers in Optics are the best in the world and have solutions to the challenges presented.

The session will conclude with a networking reception to continue the discussion and explore business opportunities.

A Day in the Life of an Industrial Scientist from Early to Late Career

Wednesday, 19 October, 19:30–20:30
Highland C/H

The Optical Material Studies Technical Group invites you to join them for this panel discussion exploring a career as an industrial scientist or engineer. Our panelists will be a mix of early, mid and late career professionals and will discuss a typical day in their role. They will share the good and bad of life outside of academia to help students prepare for an industrial job.

Presented by OPTICA Advancing Optics and Photonics Worldwide | Optical Material Studies

Movie Night – Picture a Scientist

Wednesday, 19 October, 19:30–21:00
Empire Lobby

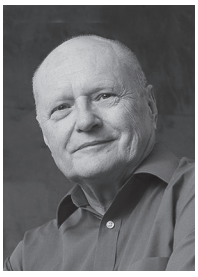
Join us for some popcorn and beer for movie night. Picture a Scientist is a feature-length documentary film chronicling the groundswell of researchers who are writing a new chapter for women scientists. A biologist, a chemist and geologist lead viewers on a journey deep into their own experiences in the sciences, overcoming brutal harassment, institutional discrimination, and years of subtle slights to revolutionize the culture of science. From cramped laboratories to spectacular field stations, we also encounter scientific luminaries who provide new perspectives on how to make science itself more diverse, equitable, and open to all. Learn more about this movie at PictureAScientist.com.

Awards, Honors and Special Recognitions

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

Optica 2022 Awards and Honors

Frederic Ives Medal/Jarus W. Quinn Prize



James C. Wyant, *University of Arizona, College of Optical Sciences, 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 Wyant for pioneering contributions in 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 is Professor Emeritus of Optical Sciences and of Electrical and Computer Engineering and Founding Dean of the College of Optical Sciences at the University of Arizona. He earned his MS and PhD degrees from The Institute of Optics, University of Rochester, after a BS in Physics from the Case Institute of Technology (now Case Western Reserve University). Prior to joining the University of Arizona, he worked at Itek. As an entrepreneur and strong supporter of industry, Wyant 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.

Over the course of his career, Wyant has been widely recognized for his ground-breaking work in optics and photonics. He is a member of the National Academy of Inventors, the National Academy of Engineering, and the International Order of the Knights of Holography. He has received many awards and honors including Optica's Joseph Fraunhofer Award/Robert M. Burley Prize and SPIE's Gold Medal. He is a Fellow of Optica, SPIE, and a Lifetime Fellow of the Optical Society of India. He served as Optica's President in 2010.

Optica Honorary Members

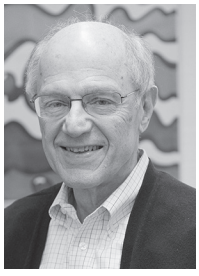
The most distinguished of all Optica Member categories, Honorary Membership is awarded for unique, seminal contributions to the field of optics, and is confirmed by the Awards Council and Optica Board of Directors.

Alain Aspect, *Institut d'Optique Graduate School / Université Paris-Saclay, France*

Aspect is recognized for illuminating fundamental aspects of the quantum-mechanical behavior of single photons, photon pairs and atoms and transforming our understanding of the quantum world.

Aspect received his MS and PhD degrees from Université d'Orsay and Ecole Normale Supérieure de Cachan. A Distinguished Scientist Emeritus at CNRS, he has also held positions at Ecole Normale Supérieure (ENS) de Yaoundé, Cameroon, ENS de Cachan, College de France, and Laboratoire Kastler-Brossel, ENS de Paris. He is currently a Professor at Institut d'Optique Graduate School / Université Paris-Saclay, a Professor at Ecole Polytechnique / Institut Polytechnique de Paris, and a Distinguished Adjunct Professor at ENS Paris-Saclay.

His work has contributed to the emergence of quantum technologies, in particular quantum cryptography and quantum simulators and computers. He has published over 200 highly influential papers in international journals and has been an invited and plenary speaker at many meetings. He is a Fellow of Optica, the American Physical Society, and the European Optical Society and has received numerous awards and recognitions, including Optica's Frederic Ives Medal/Jarus W. Quinn Prize. In 2014, he was named Officier de la Légion d'Honneur, the highest French order of merit.



Joseph H. Eberly, *Institute of Optics, University of Rochester, USA*

Eberly is honored for pioneering contributions to the foundations of quantum optics theory, and for his dedicated service to the optics community and visionary leadership in promoting international cooperation in optics research.

Eberly received his BS in Physics from Penn State and his PhD in Physics from Stanford University. He joined the Physics and Astronomy faculty of the University of Rochester in 1967, where he is presently the Andrew Carnegie Professor of Physics in the Department of Physics and Astronomy in the School of Arts and Sciences, and jointly Professor of Optics in the Institute of Optics in the Hajim School of Engineering and Applied Sciences.

His long-time research interests in quantum optics and radiation physics have led to a number of discoveries and innovations, including the initial description of the spontaneous collapse and revival effect, the first observation of Bessel beams, predictions of the recently observed non-spreading localized states of electrons in atoms, and the sudden death effect in quantum entanglement. He is the founding editor of *Optics Express*, the first Open Access journal in physics and served as Optica's President in 2007. He is a Fellow of Optica and the American Physical Society, and has received numerous awards and recognitions, including Optica's Frederic Ives Medal/Jarus W. Quinn Prize.

Esther Hoffman Beller Medal

Julie Bentley, *University of Rochester, USA*

The Beller Medal recognizes outstanding contributions to education in optical science and engineering. Bentley is recognized for her central role in shaping the optics education of countless undergraduate and graduate students.

Max Born Award

Yuri Kivshar, *Australian National University, Australia*

The Born Award is presented to a person who has made outstanding contributions to physical optics, theoretical or experimental. Kivshar is recognized for pioneering and ground-breaking research in nonlinear metamaterials and all-dielectric resonant metaphotonics that derives unique optical functionalities from electric and magnetic dipolar and multipolar Mie-type resonances underpinning new discoveries in nonlinear and topological nanophotonics.

Stephen D. Fantone Distinguished Service Award

Joseph A. Izatt, *Duke University, USA*

The Fantone Award recognizes outstanding service to Optica. Izatt is honored for over 25 years of outstanding service to the optics community and Optica in areas as diverse as publications, conferences, strategic planning, and the Optica Board of Directors.

Paul F. Forman Team Engineering Excellence Award

EnFocus Intraoperative Optical Coherence Tomography Development Team, *Leica Microsystems, USA*

The Forman Team Award recognizes technical achievements in optical engineering. The team is recognized for developing an optically brilliant, latency-free intrasurgical optical coherence tomography microscope that fully integrates into the ophthalmic surgical workflow, allowing a surgeon to see more and do more to preserve patient sight.

Joseph Fraunhofer Award/Robert M. Burley Prize

Aydogan Ozcan, *University of California Los Angeles, USA*

The Fraunhofer Award/Burley Prize recognizes significant research accomplishments in the field of optical engineering. Ozcan is honored for seminal optical engineering contributions to computational optical imaging, lensfree microscopy, holography and mobile optical sensing.

Nick Holonyak Jr. Award

Marshall I. Nathan, *IBM TJ Watson Research Center and University of Minnesota, USA*

The Holonyak Award recognizes contributions to optics based on semiconductor-based devices and optical materials, including basic science and technological applications. Nathan is recognized for his pioneering work in creating GaAs diode lasers and inventive contributions to compound semiconductors and laser physics.

Robert E. Hopkins Leadership Award

Andrea Armani, *University of Southern California, USA*

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. Armani is honored for leadership in promoting online platforms for disseminating science and educational programs, thereby reducing barriers for early career researchers and increasing mentoring opportunities worldwide.

Edwin Land Medal

Shin-Tson Wu, *University of Central Florida, 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. Wu is recognized for contributions to novel displays and diffractive optics that led to commercial products and widespread applications, especially for augmented reality, virtual reality, and imaging devices.

Sang Soo Lee Award

Andrew Forbes, *University of Witwatersrand, South Africa*

The Lee Award, co-presented with the Optical Society of Korea, recognizes outstanding leadership in founding or growing the optics and photonics community locally. Forbes is honored for advancing photonics in South Africa through strategic leadership in executing national photonics programmes, high-impact research and education, and mentorship of African researchers.

Emmett N. Leith Medal

Min Gu, *University of Shanghai for Science and Technology, China*

The Leith Medal recognizes seminal contributions to the field of optical information processing. It is presented to Gu for outstanding contributions to nanoscale optical information technology by extending the limit of optical data storage, holography and display through multi-dimensional division including optical orbital angular momentum and vectorial domains.

C. E. K. Mees Medal

N**orbert F. Scherer**, *University of Chicago, USA*

The Mees Medal recognizes an original use of optics across multiple fields. It is presented to Scherer for seminal contributions to optical science by developing novel methods and applications in ultrafast nonlinear spectroscopy, single molecule microscopy, nanoplasmonics, optical vector beam spectroscopy, and optical trapping, optical matter and nano-machines.

Kevin P. Thompson Optical Design Innovator Award

Heejoo Choi, *University of Arizona, USA*

The Thompson Award recognizes contributions to lens design, optical engineering, or metrology at an early career stage. Choi is recognized for innovative design of a UV cross-dispersion space telescope and engineering of a laser-truss Large Binocular Telescope metrology system.

Charles Hard Townes Medal

Girish S Agarwal, *Texas A&M University, USA*

The Townes Medal recognizes contributions to quantum electronics. Agarwal is recognized for discoveries in theoretical quantum optics especially vacuum induced coherences, photon added coherent states, non-classical cat states for qubits via engineered many body interactions, and transparency in optomechanical systems.

Optica Treasurer's Award

Kari Apter, *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. Apter is celebrated for her service as a selfless leader and respected ambassador to Optica's most valuable resource, its global community of volunteers and members.

Herbert Walther Award

Jun Ye, *JILA University of Colorado Boulder, USA*

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. Ye is recognized for an extensive body of work in optics, including ultra-stable lasers, ultra-cold polar molecules, ultra-high resolution spectroscopy, and ultra-high accuracy optical clocks.

The following award and medal recipients were recognized at other events this year:

Michael S. Feld Biophotonics Award

Valentina Emiliani, *Vision Institute, CNRS, France*

The Feld Award recognizes individuals for their innovative and influential contributions to the field of biophotonics, regardless of their career stage. Emiliani is recognized for pioneering research on wavefront engineering in neurophotonics, which enabled the selective control of individual neurons in the intact brain using light and optogenetics, and initiated the era of all-optical brain control.

Joseph W. Goodman Book Writing Award

Paul F. McManamon, *Exciting Technology LLC and University of Dayton, USA*

The Goodman Award, co-presented with SPIE, recognizes authorship of an outstanding book in the field of optics and photonics, published in the last six years, that has contributed significantly to research, teaching, or the optics and photonics industry. McManamon is honored for his book, *LiDAR Technologies and Systems* (SPIE Press, 2019).

Ellis R. Lippincott Award

Martin Zanni, *University of Wisconsin-Madison, USA*

The Lippincott Award, co-presented with the Coblentz Society and the Society for Applied Spectroscopy, recognizes contributions to vibrational spectroscopy. Zanni is honored for innovative contributions to the technology and application of two-dimensional infrared spectroscopy.

Adolph Lomb Medal

Ido Kaminer, *Technion - Israel Institute of Technology, Israel*

The Lomb Medal recognizes noteworthy contributions made to optics at an early career stage. Kaminer is recognized for pioneering contributions which led to the creation of a paradigm shift in light-matter interactions of photonic quasiparticles.

William F. Meggers Award

Michael D. Fayer, *Stanford University, USA*

The Meggers Award recognizes outstanding work in spectroscopy. Fayer is honored for seminal developments in ultrafast nonlinear spectroscopy, which have heavily influenced the chemical physics spectroscopy landscape.

David Richardson Medal

Jim Tatum, *Dallas Quantum Devices, USA*

The Richardson Medal recognizes significant contributions to optical engineering, primarily in the commercial and industrial sector. Tatum is recognized for significant contributions to the development and commercialization of VCSEL technology.

Edgar D. Tillyer Award

Mary Hayhoe, *University of Texas at Austin, USA*

The Tillyer Award recognizes distinguished work in the field of vision. Hayhoe is honored for outstanding contributions to our understanding of visual perception and cognition in natural tasks through the innovative use of technology for recording eye, head, limb, and body position in both natural and virtual environments.

John Tyndall Award

Meint Smit, *Eindhoven University of Technology, Netherlands*

The Tyndall Award, co-presented with the IEEE/Photonics Society, recognizes contributions to fiber optic technology. Smit is recognized for leadership in building a photonic integration ecosystem, and pioneering contributions to key photonic devices including the arrayed waveguide grating.

R. W. Wood Prize

Shanhui Fan, *Stanford University, USA*

The Wood Prize recognizes an outstanding discovery, scientific or technical achievement, or invention in the field of optics. Fan is recognized for foundational discoveries in photonics, ranging from resonator, topological, and non-reciprocal photonics to energy applications including the discovery of daytime radiative cooling based on a new kind of energy source.

Optica Fellows

106 Fellows, from 24 countries, were elected in 2022 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/2022 Fellows.

Andrew Berger, *The Institute of Optics, University of Rochester, USA*
For significant advances in using intrinsic optical contrast mechanisms to analyze untreated cells and tissues, either in living subjects or in laboratory

Giuseppe D'Aguanno, *The Johns Hopkins University Applied Physics Laboratory, USA*
For significant and sustained contributions to the study of nonlinear optics in periodic nanostructures, metamaterials, and microresonators

Aurelien David, *Google, USA*
For pioneering contributions to the physics and architectures of extremely efficient spectrally engineered light-emitting-diode illumination sources

Daniel X. Hammer, *Food and Drug Administration, USA*
For outstanding contributions in the development, translation, and clinical application of biomedical imaging systems

Zubin Jacob, *Purdue University, USA*
For pioneering theory-driven experiments in the areas of thermal photonics and nanophotonic metamaterials

Antonio Zelaquett-Khoury, *Universidade Federal Fluminense, Brazil*
For ground-breaking work on structured quantum light and applications to classical optics of quantum information concepts including state non-separability

Irina V. Larina, *Baylor College of Medicine, USA*
For the development of novel imaging instruments for biomedical applications across multiple scales, and for service to the community

Dr. Zhenguo Lu, *Advanced Electronics and Photonics Research Centre, National Research Council Canada, Canada*
For pioneering contributions to quantum dot semiconductor lasers and their applications in optical communications and wireless networks

Onofrio M. Maragò, *Istituto per i Processi Chimico Fisici-CNR, Italy*
For groundbreaking contributions to optical trapping and optical manipulation of atoms and particles

Paulo Nussenzveig, *Universidade de Sao Paulo, Brazil*
For ground-breaking demonstrations of multipartite multi-color entanglement of light in above-threshold optical parametric oscillators

Yasutake Ohishi, *Toyota Technological Institute, Japan*
For outstanding contributions to the research on fiber amplifiers and nonlinear optics based upon optical fibers with specialty glasses

Jae-Hyeung Park, *Inha University, Republic of Korea*
For outstanding contributions in 3D information processing and display technology based on integral imaging and holography

Michael Pircher, *Medical University of Vienna, Austria*
For outstanding contributions to ocular imaging and development of advanced optical coherence tomography methods

Rick Plympton, *Optimax Systems Inc, USA*
For innovative and outstanding business leadership and service to the Society

Sylvie Roke, *Ecole Polytechnique Federale de Lausanne, Switzerland*
For pioneering contributions to the theory and practice of nonlinear light scattering and imaging technologies that enable molecular level studies of complex aqueous solutions

Emmanuel Stratakis, *Institute of Electronic Structure & Laser, Foundation for Research & Technology Hellas, Greece*
For outstanding achievements and excellent leadership in both basic research and technology translation to industry applications for laser matter interactions in micro/nanoscale

Hakan Ürey, *Koç Üniversitesi, Turkey*
For outstanding contributions to the research, development, and commercialization of optical display and imaging 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 enhance opportunities for the understanding and inclusion of people of diverse cultures, backgrounds, and experiences. The 2022 honorees are:

Danuta Sampson, *University College London, UK*

Imrana Ashraf, *Quaid-I-Azam University, Pakistan*

Edmund Optics, *USA*

Optica Senior Members

Congratulations to the Optica 2022 Senior Member class. The '22 class consists of 170 Optica members, who have distinguished themselves through their exemplary experience and professional development within the field of optics and photonics.

The 2022 class joins a distinguished group of scientists, engineers, entrepreneurs and innovators who have demonstrated exemplary professional accomplishments in optics and photonics.

2021 Optica Technical Group Prizes

Optica technical communities bring together members from around the globe to help foster lasting, valuable connections. The Board of Meeting established several prizes to recognize the outstanding work being done by our technical group volunteers.

Most Active Technical Group

Recognizes the group with the highest number of activities in a calendar year and the group with the highest number of communications within a calendar year

Most Activities: **Color Technical Group**, Francisco Imai, Chair

Most Communications: **Short Wavelength Sources and Attosecond/High Field Physics Technical Group**, Guilio Vampa, Chair

Most Popular Activity

Recognizes the group hosted activity, either in person or virtual, with the highest number of participants.

Integrated Photonics Technical Group, "What's Next in Integrated Photonics – Hot Topics at CLEO: 2021," Mengjie Yu, Chair

Greatest Growth in Activity

Recognizes the group that has shown the most improvement in the number of activities or communications in any given year or over the course of a chair's term

Fiber Optics Technology & Applications Technical Group, Faezeh Gholami, Chair

Innovation Prize

Recognizes groups using new and unique approaches to engage members

Nanophotonics Technical Group, Cheng Zhang, Chair

Photonic Metamaterials Technical Group, Dimitrios Tzarouchis, Chair

2022 Optica Foundation Honorees

The Optica Foundation is celebrating its 20th anniversary of recognizing and fostering excellence in the next generation of optics and photonics.

Our donor-directed and supported programs provide scholarships, grants, prizes, professional development trainings, and schools benefitting students and early-career professionals.

Amplify Scholars

Established in 2022 in partnership with founding donors Thorlabs and Meta, the Amplify Scholarship is awarded annually to 10 Black undergraduate or graduate level students. This grant is both merit and need-based. In addition to the funding, recipients gain access to our global network of mentors and the supporting companies.
For the inaugural year, the Optica Foundation Board of Directors approved support for an additional five scholars. All recipients have also been invited to the Amplify Immersion program taking place during FiO LS. The 2022 scholars are:

Chenui Eugene Aban, *University of Buea, Cameroon*

Adewale Akinyimika, *Hebei University of Techology, China*

Akosua Boampong, *Wellesley College, USA*

Jennifer Bragg, *University of Arizona, USA*

Shayla Breedlove, *University of Florida, USA*

Ayomikun Esan, *University of Auckland, New Zealand*

Ibrahim Issah, *Tampere University, Finland*

Rutendo Jakachira, *Brown University, USA*

Arielle Joasil, *Columbia University, USA*

Ngei Katumo, *Karlsruhe Institute of Technology, Germany*

Hamidu Mbonde, *McMaster University, Canada*

Sylvester Munyao, *Multimedia University of Kenya, Kenya*

Ikechi Ndamati, *McGill University, Canada*

Karabo Ndebele, *Botswana International University of Science and Technology, Botswana*

Sheilah Njoka, *Multimedia University of Kenya, Kenya*

Optica Women Scholars

Established in 2022 in partnership with founding donors Janet Fender and L. John Otten, Elizabeth Rogan, Coherent, Corning, Google, Innolight, Intel, Meta, Neophotonics and Source Photonics, 20 Optica Women Scholars are selected annually and receive a merit and need-based grant. In addition to the funding, scholars gain access to our global network of mentors and the supporting companies. The 2022 recipients are:

Emma Abbey, *University of Victoria, Canada*

Dulce María Badia, *University of Murcia, Spain*

Apoorva Bisht, *University of Arkansas, Fayetteville, USA*

Jennifer Bragg, *University of Arizona, USA*

Klaudia Dilcher, *University of Warsaw, Poland*

Alice Drozdov, *University of the Witwatersrand, Johannesburg, South Africa*

Ilgim Efeturk, *Izmir Institute of Technology, Turkey*

Mackenzie Essington, *Western University, Canada*

Ana Garrigues Navarro, *Universitat de València, Spain*

Anastasia Goulopoulos, *University of Massachusetts Lowell, USA*

Jaclyn John, *University of Arizona, USA*

Jodi Kreiner, *University of Arizona, USA*

Elena Moreno, *University of Murcia, Spain*

Maimuna Nagey, *Multimedia University of Kenya, Kenya*

Lalitasri Nandivada, *University of Waterloo, Canada*

Natasha Nehra, *The University of Texas at Austin, USA*

Isabella Pardo, *University of Central Florida, USA*

Yaoqi Tang, *Shanghai Jiao Tong University, China*

Trulani van der Heyde, *University of Auckland, New Zealand*

María José Villamarín, *Universidad San Francisco de Quito, Ecuador*

Optica Ambassadors

As emerging leaders in the optics and photonics community, Ambassadors will provide career advice, technical knowledge and mentorship with students and early career professionals in the field by supporting professional development events at meetings and engaging with their communities. Several classes of ambassadors including those recognized in 2022 are invited to FiO LS to provide training and mentorship during the Student Leadership Experience and Optica Foundation NextGen Lounge.

Barbara Buades, *MEETOPTICS, Spain*

Brandon Buscaino, *Ciena Corporation, USA*

Alessandra Carmichael-Martins, *Indiana University Bloomington, USA*

Jhonattan Cordoba Ramirez, *Universidade Federal de Minas Gerais (UFMG), Brazil*

Sangyeon Cho, *Massachusetts General Hospital and Harvard Medical School, USA*

Faezeh Gholami, *IBM, USA*

Alexander Jantzen, *Aquark Technologies, United Kingdom*

Hyeon Jeong Lee, *Zhejiang University, China*

Rodrigo da Silva Benevides, *ETH Zurich, Switzerland*

Richard Zeltner, *Menlo Systems GmbH, Germany*

APS/Division of Laser Science Awards and Honors

Arthur L. Schawlow Prize in Laser Science

Tony F. Heinz, *Stanford University, USA*

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.

Heinz is honored for ground-breaking contributions to the development and application of laser spectroscopic techniques to probe surfaces, interfaces, and nanoscale materials.

Tony Heinz received a BS degree in Physics from Stanford University in 1978 and a PhD degree, also in Physics, from the University of California, Berkeley in 1982. He is currently a Professor of Applied Physics at Stanford University and the Associate Laboratory Director for Energy Sciences at SLAC National Accelerator Laboratory. Previously, he was a research staff member with the IBM Research Division and a professor of Physics and Electrical Engineering at Columbia University. Heinz has served as Chair of the APS Division of Laser Science and President of Optica. He has received numerous awards and is a Fellow of APS, Optica, AAAS, American Vacuum Society, and IEEE.

Nir Davidson, *Weizmann Institute of Science, Israel*
For introducing a new experimental platform for phase-locking thousands of lasers, applying it to simulate spin Hamiltonians and to solve hard computational problems, and for the pioneering use of advanced laser tools to study fundamental properties of ultra-cold atoms and quantum degenerate gases.

Tara Fortier, *National Institute of Standards and Technology, Canada*
For pioneering contributions to phase stabilized mode-locked lasers and optical combs, fundamental tests of physics with precision optical spectroscopy, and the development and comparisons of optical atomic clocks with unprecedented precision.

Shuang Zhang, *University of Hong Kong, Hong Kong*
For seminal contributions to the development of optical metamaterials, topological photonics, nonlinear metasurfaces, and metasurface photonic devices.

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, listed below, will present their work at a special session of the Laser Science Conference, and the winner will be announced at the DLS Business Meeting.

Eran Lustig, *Technion - Israel Institute of Technology, Israel*

Yijing Huang, *Stanford University, USA*

Christopher Panuski, *Massachusetts Institute of Technology, USA*

Amirhassan Shams-Ansari, *Harvard University, USA*

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*
Ting-Chung (T.-C.) Poon, *Virginia Tech USA*

FiO Theme Coordinators

Machine Learning

Aydogan Ozcan, *University of California Los Angeles, USA*
Lei Tan, *Boston University, USA*
Laura Weler, *University of California Berkeley, USA*

Virtual Reality and Augmented Vision

Douglas Lanman, *Facebook Reality Labs, USA*
Kaan Aksit, *University College London, UK*

FiO Program Subcommittees

FiO 1: Fabrication, Design and Instrumentation

Yuzuru Takashima, *University of Arizona, USA,* **Subcommittee Chair**
Liangcai Cao, *Tsinghua University, China*
Alois Herkommer, *University of Stuttgart, Institute of Applied Optics (ITO), Germany*
Tomasz Kozacki, *Warsaw University of Technology, Poland*
Yuan Luo, *National Taiwan University, Taiwan*
Sung-Wook Min, *Kyung Hee University, Republic of Korea*
Gladys Minguez-Vega, *Jaume I University, Spain*
Yusuke Nakamura, *Hitachi, Japan*
Jyrki Saarinen, *University of Eastern Finland, Finland*
Raktim Sarma, *Sandia National Laboratories, USA*
Ayano Tanabe, *Citizen Watch Company, Japan*
Florian Willomitzer, *Northwestern University, USA*
Meredith Kupinski, *University of Arizona, USA*

FiO 2: Optical Interactions

Andrew Forbes, *University of Witwatersrand, South Africa,* **Subcommittee Chair**
Angela Dudley, *CSIR National Laser Centre, South Africa*
Shawn Sederberg, *Simon Fraser University, Canada*
Yijie Shen, *University of Southampton, UK*
Qiwen Zhan, *University of Shanghai for Science and Technology, China*
Yan Zhang, *Capital Normal University, China*

FiO 3: Quantum Electronics

Karan Mehta, *Cornell University, USA,* **Subcommittee Chair**
Jason Orcutt, *IBM Thomas J. Watson Research Center, USA,*
Ehab Awad, *King Saud University, Saudi Arabia*
Ebrahim Karimi, *University of Ottawa, Canada*
Boubacar Kante, *University of California, Berkeley, USA*
Mercedeh Khajavikhan, *University of Southern California, USA*
Mohammad Mirhosseini, *California Institute of Technology, USA*
Andrew Shields, *Toshiba Research, UK*
Josh Silverstone, *University of Bristol, UK*

FiO 4: Fiber Optics and Optical Communications

Alexey Turukhin, *Cisco Systems, Inc., USA,* **Subcommittee Chair**
Mark Feuer, *College of Staten Island, The City University of New York, USA*
Madeleine Glick, *Columbia University, USA*
Ying Jiang, *Nokia Bell Labs, USA*
Inwoong Kim, *Fujitsu Network Communications, USA*
Lyuba Kuznetsova, *San Diego State University, USA*
Julia Larikova, *Infinera, USA*
Giovanni Milione, *NEC Laboratories America Inc., USA*
Milen Paskov, *Meta, UK*
Chuan Qin, *Microsoft Corporation, USA*
Lee Richardson, *Amazon, Ireland*

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

Linjie Zhou, *Shanghai Jiao Tong University, China,* **Subcommittee Chair**
Alvaro Casas-Bedoya, *University of Sydney, Australia*
Takuo Tanemura, *University of Tokyo, Japan*
Christopher V. Poulton, *Analog Photonics, USA*
Brian Stern, *Nokia Bell Labs, USA*
Nikolai Klimov, *NIST, USA*
Xianshu Luo, *AMF, Singapore*
Weidong Zhou, *University of Texas at Arlington, USA*
Yan Cai, *Shanghai Institute of Microsystem and Information Technology CAS, China*
Yu Li, *InPhi, Singapore* Carlos Alonso-Ramos, *University of Paris-Saclay, France*

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

Ireneusz Grulkowski, *Nicolaus Copernicus University, Poland,* **Subcommittee Chair**
Judith Birkenfeld, *Instituto de Óptica CSIC, Spain*
Michelle Sander, *University of Boston, USA*
Yoav Shechtman, *Technion Israel Institute of Technology, Israel*
Hakan Urey, *Koc Universitesi, Turkey*
Michalina Gora, *Wyss Center for Bio and Neuroengineering, Switzerland*
Timothy M. Baran, *University of Rochester, USA*
Wu Yuan, *The Chinese University of Hong Kong, China*
Thomas Klein, *Optores GmbH, Germany*

FiO 7: Information Acquisition, Processing and Display

Yaping Zhang, *Kunming University of Science and Technology, China,* **Subcommittee Chair**
Partha Banerjee, *University of Dayton, USA*
Chau-Jern Cheng, *National Taiwan Normal University, Taiwan*
Tomoyoshi Shimobaba, *Chiba University, Japan*
Jae-Hyeung Park, *Inha University, Korea*
Daping Chu, *University of Cambridge, UK*
Jung-ping Liu, *Feng Chia University, Taiwan*
Tatuski Tahara, *National Institute of Information and Communications Technology, Japan*

Laser Science Program Committee

Randy Bartels, Colorado State University, USAl, **Chair**
David Reis, SIMES (Stanford Institute for Materials and Energy Sciences), USA, **Chair**
Sergio Carbajo, *University of California, Los Angeles, USA;* Ultrafast Dynamics in Complex Systems, **Chair**
Jennifer Ogilvie, *University of Michigan, USA;* Biophotonics and Chemistry Application, **Chair**
Willie Padilla, *Duke University, USA;* Nanophotonics, Plasmonics, and Metamaterials, **Chair**
Arvinder Sandhu, *University of Arizona, USA;* XFEL and High-field Laser Science, **Chair**
Nick Vamivakas, *University of Rochester, USA;* Quantum Science, **Chair**

2022 Frontiers in Optics + Laser Science
17–20 October 2022

Joseph A. Floreano Rochester Riverside Convention Center, Rochester, New York, USA

Hybrid Event - Eastern Daylight Time (UTC - 04:00)

Agenda of Sessions — Monday, 17 October

Eastern Daylight Time (EDT, UTC - 04:00)	Theme: Virtual Reality and Augmented Vision Highland A/K	FiO Highland B/J	FiO Highland C/H	FiO Highland D/G	FiO Highland E/F	LS Cascade A/B/C	Lilac Ballroom
07:00–16:30	**Registration,** *Galleria*						**SpE7 • LS Symposium on Undergraduate Research** (12:00–18:00)
08:00–09:00	**FM1A •Grand Challenges**	**FM1B • Advanced Quantum Sources**	**FM1C • Super Resolution**	**FM1D • Advanced Transmission Technologies**	**FM1E • Integrated Laser Technology**	**LM1F • Carl E. Anderson Division of Laser Science Dissertation Award**	
08:00–18:00	**SpE19 • Optica Publishing Group's Meet the Journal Editors,** *Optica Member Lounge*						
09:00–17:00	**Optica Member Lounge,** *Galleria*						
09:15–10:00	**FM2A • FiO Visionary Session I; Demetri Psaltis, EPFL, Switzerland,** *Highland A/K*						
10:00–10:30	**Coffee Break,** *East/West Corridors*						
10:30–12:30	**FM3A • Near-Eye Holographic Displays**	**FM3B • Error Correction and Enhanced Measurement**	**FM3C • Optical System for Digital Transformation**	**FM3D • High Speed Optical Interconnects** (ends at 12:00)	**FM3E • Complex Light Fields I**	**LM3F • Quantum Information and Measurement**	
11:00–16:00	**SpE6 • Mid-Manager Summit,** *Hyatt Regency Rochester - Grand Ballroom A* **(Invitation Only)**						
12:30 -13:30	**SpE8 • Non-Imaging Optical Design Technical Group Networking Event,** *Cascade D/E/F*						
14:00–15:30	**FM4A • Emerging Technologies**	**FM4B • Atom and Ion-Based Technologies**	**FM4C • Advanced Sensing and Imaging I**	**FM4D • Fiber and Free Space Communications**	**FM4E • Complex Light Fields II**	**LM4F • Advances in Ensemble and Single Molecule Spectroscopies**	
15:00–15:30	**Coffee Break,** *East/West Corridors*						
16:00–18:00	**FM5A • Perception and Displays** (ends at 18:30)	**FM5B • Quantum Photonic Systems I**	**FM5C • Advanced Sensing and Imaging II**	**FM5D • Integrated Optical Devices**	**FM5E • 3D Imaging and Display Applications**	**LM5F • Light Driven Electronic Processes**	
18:00–19:00	**Optica Display Technology Technical Group Networking Event,** *Cascade D/E/F*						
18:30–21:00	**Awards Ceremony and Reception,** *Memorial Art Gallery* **(Invitation Only)**						

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

Agenda of Sessions — Tuesday, 18 October

Eastern Daylight Time (EDT, UTC -04:00)	Theme: Virtual Reality and Augmented Vision Highland A/K	FiO Highland B/J	FiO Highland C/H	FiO Highland D/G	FiO Highland E/F	LS Cascade A/B/C
07:00–18:30	**Registration,** *Galleria*					
08:00–09:00	**FTu1A • Frameworks and Toolkits**	**FTu1B • Linear and Nonlinear Interactions**	**FTu1C • Space-Time Light**	**FTu1D • 3D Display Technology**	**FTu1E • Metrology and Inspection**	**LTu1F • Frontiers in Tabletop Ultrafast X-Ray Spectroscopy**
08:30–15:00	**SpE11 • Meta Academic Forum,** *Hyatt Regency Rochester – Regency Ballroom*					
09:00–17:00	**Optica Member Lounge,** *Galleria*					
09:15–10:00	**FTu2A • FiO Visionary Session II; Marty Banks, University of California, Berkeley, USA**	**LTu2B • LS Visionary Session I Kimberly Budil, Lawrence Livermore National Laboratory, USA**				
10:00–15:30	**Science + Industry Showcase Theater** **JTu3A • Joint Plenary Session I; Scott Acton, Ball Aerospace & Technologies, USA,** 10:30–11:30 **Plenary Plus: Q&A with Scott Acton,** 11:30–12:00 **Adding More Degrees of Freedom to Optical Design Through Novel Optical Materials and Fabrication Methods,** 12:15–13:15 **Commercializing Meta-optics: Applications, New Opportunities and Challenges,** 13:30–14:15 **Technology Showcase: Deployable Optical Frequency Combs and Laser Modules for Next-Generation Quantum Sensors presented by Kevin Knabe, Director of R&D, Vescent, USA,** 14:30–14:50 **The Challenges of Optical Testing the Webb Telescope on Earth and Applications for the Roman Telescope,** 15:00–15:45			**Science + Industry Showcase** **Coffee Break,** 10:00–10:30 **Optica Foundation 20th Anniversary NextGen Lounge,** 10:00–15:30 **JTu4A • Joint Poster Session IA (In person),** 11:30–13:00 **Lunch Break,** 12:30–14:00 **JTu5A • Joint Poster Session IIA (In person),** 14:00–15:30 **Coffee Break,** 15:00–15:30 **Optica Display Technology Technical Group Special Talk,** 15:00–15:30		
11:30–13:00	**JTu4B • Joint Poster Session IB** *(ePoster Gallery)*					
12:00–13:00	**SpE5 • Recent Advances in Laser Technology and Applications in Manufacturing,** *Highland E/F* **SpE12 • Speed Networking for Spectroscopy Enthusiasts,** *Cascade D/E/F* **(RSVP Required)**					
13:00–14:00	**Optica Membership "See Yourself in Optica" Mixer,** *Optica Member Lounge*					
14:00–15:30	**SpE13 • Meet the Editors of Physical Review,** *Science & Industry Showcase Optica Booth* **JTu5B • Joint Poster Session IIB** *(ePoster Gallery)*					
15:30–17:00		**FTu6B • Quantum Photonic Devices I**	**FTu6C • Hybrid Photonic Integration**	**FTu6D • General Information Acquisition and Processing**	**FTu6E • Ultrafast I**	**LTu6F • X-Ray Spectroscopy and Imaging**
17:00–18:00	**SpE17 • Optica Display Technology Technical Group Special Talk,** *Highland E/F*					
17:30–18:15	**Optica Annual Business Meeting,** *Hyatt Regency Rochester – Grand Ballroom B*					
17:30–19:00	**JTu7A • Joint Postdeadline Papers Session I**	**JTu7A • Joint Postdeadline Papers Session II**	**JTu7A • Joint Postdeadline Papers Session III**	**JTu7A • Joint Postdeadline Papers Session IV**		**DLS Business Meeting**
18:30–21:00	**Conference Reception,** *Lilac Ballroom*					

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Agenda of Sessions — Wednesday, 19 October

Eastern Daylight Time (EDT, UTC - 04:00)	Theme: Machine Learning Highland A/K	FiO Highland B/J	FiO Highland C/H	FiO Highland D/G	FiO Highland E/F	LS Cascade A/B/C
07:30–17:30	**Registration,** *Galleria*					
08:00–09:00	**FW1A • Computational Imaging and Machine Learning**	**FW1B • Quantum Photonic Systems II**	**FW1C • Ultrafast II**	**FW1D • Clinical Applications of Optical Imaging**	**FW1E • Large-Scale Photonic Integration**	**LW1F • Metasurfaces and Plasmonics I**
09:00–17:00	**Optica Member Lounge,** *Galleria*					
09:15–10:00	**FW2A • FiO Visionary Session III; Mercedes Gimeno-Segovia, PsiQuantum, USA,** *Highland A/K* **LW2B • LS Visionary Session II; Frank Wise, Cornell University, USA,** *Highland B/J*					
10:00–15:30	**Science + Industry Showcase Theater** **JW3A • Joint Plenary Session II; Monika Ritsch-Marte, Medical University of Innsbruck, Austria,** 10:30–11:30 **Plenary Plus: Q&A with Monika Ritsch-Marte,** 11:30–12:00 **Panel on New Government Programs and Funding Opportunities,** 12:15–13:00 **Women in Optics: Challenges in Optics and Photonics Careers - Thriving at All Levels,** 13:10–13:55 **Special Presentation, U.S. Representative Joe Morelle,** 14:00–14:20 **Challenges of PIC Packaging for Power-Efficient High-Speed Optical Communications,** 14:30–15:30			**Science + Industry Showcase** **Coffee Break,** 10:00–10:30 **Optica Foundation 20th Anniversary NextGen Lounge,** 10:00–15:30 **JW4A • Joint Poster Session IIIA (In person),** 11:30–13:00 **Lunch Break,** 12:30–14:00 **JW5A • Joint Poster Session IVA (In person),** 14:00–15:30 **Coffee Break,** 15:00–15:30		
11:30–13:00	**JW4B • Joint Poster Session IIIB,** *(ePoster Gallery)*					
12:15–14:30	**SpE15 • 2022 Luminate Awards,** *Lilac Ballroom*					
14:00–15:30	**JW5B • Joint Poster Session IVB** *(ePoster Gallery)*					
14:30–17:30	**SpE16 • End User Workshop,** *Cascade D/E/F*					
15:30–17:00	**FW6A • Optical Computing**	**FW6B • Novel Wave Interactions**	**FW6C • Light-Matter Interactions I**	**FW6D • High-Resolution Optical Visualization of Ocular Structures**	**FW6E • Sensors and Biophotonics**	**LW6F • Dynamical Behavior at Fundamental Spatio-Temporal Scales**
17:30–19:00	**FW7A • AI in Biomedical Imaging**	**FW7B • Quantum Photonic Devices II**	**FW7C • Light-Matter Interactions II**	**FW7D • Novel Applications of Imaging Modalities**	**FW7E • Integrated Nonlinear Photonics**	**LW7F • Dynamical Behavior Under Extreme Conditions**
19:30–20:30	**SpE20 • A Day in the Life of an Industrial Scientist from Early to Late Career,** *Highland C/H*					
19:30–21:00	**SpE18 • Movie Night – Picture a Scientist,** *Empire Lobby*					

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Agenda of Sessions — Thursday, 20 October

Eastern Daylight Time (EDT, UTC - 04:00)	Theme: Machine Learning Highland A/K	FiO Highland B/J	FiO Highland C/H	FiO Highland D/G	FiO Highland E/F	LS Cascade A/B/C
07:30–10:30	**Registration,** *Galleria*					
08:00–09:00	**FTh1A • At the Intersection of Photonics and AI**	**FTh1B • Deep Learning and Novel Design**	**FTh1C • Light-Matter Interactions III**	**FTh1D • Biophotonics**	**FTh1E • Metamaterial and Metasurface**	**LTh1F •Cavity QED and Quantum Photonics**
09:00–13:00	**Optica Member Lounge,** *Galleria*					
09:15–10:00	**FTh2A • FiO Visionary Session IV; Maria Spiropulu, California Institute of Technology, USA**	**LTh2B • LS Visionary Session III; Tony Heinz, Stanford University, USA**				
10:00–10:30	**Coffee Break,** *East/West Corridors*					
10:30–12:30	**FTh3A • Machine Learning-Enabled Imaging** (ends at 12:00)	**FTh3B • Machine and Deep Learning in Biomedical Applications** (ends at 11:45)	**FTh3C • Optical Interactions** (ends at 12:15)	**FTh3D • Advances in Technology of Optical Imaging for Biomedicine**	**FTh3E • Integrated Photonics for Quantum Applications**	**LTh3F • Metasurfaces and Plasmonics II**

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