Frederic Ives Medal/Jarus W. Quinn Prize

The highest award conferred by Optica, for overall distinction in optics

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

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

James Wyant received his Ph.D. from the University of Rochester, USA, and has made noteworthy contributions to the field in both academia and industry throughout his career. In 1999, he became the Director of the Optical Sciences Center at the University of Arizona, and a few years later he became the Founding Dean of the University’s College of Optical Sciences. In 2019, the college was renamed the James C. Wyant College of Optical Sciences in his honor. As an entrepreneur and strong supporter of industry, he co-founded WYKO Corporation and 4D Technology Corporation and has been a board member for several other companies, such as Veeco Instruments, D.Metrix, Optics 1 and ILX Lightwave.

A prolific author and speaker, Wyant has written more than 300 scientific articles and given numerous invited talks on interferometry, holography and optical testing. His pioneering work in the field of adaptive optics played an important role in the development of the first adaptive-optical system, and his holographic techniques, which solved the problem of testing aspheric surfaces, have been a standard procedure for decades. He is also well known for creating the optical testing technique used on the James Webb Space Telescope as well as most, if not all, of the giant telescopes around the world.

Optica congratulates the 23 recipients of its prestigious awards and medals. The honorees’ outstanding contributions are advancing the field of optics and photonics. We are proud to celebrate these technical, research, education, business, leadership and service accomplishments.

Special thanks to the dedicated nominators, references and award selection committee members for their support of this important program. Learn more or submit a nomination at optica.org/awards.

Over the course of his career, Wyant has been widely recognized for his groundbreaking work in optics and photonics. He is a member of the US National Academy of Inventors, the US National Academy of Engineering, and the International Order of the Knights of Holography. He is also a Fellow of Optica and SPIE and a Lifetime Fellow of the Optical Society of India. A few of the numerous awards he has received for his technical, entrepreneurial and academic achievements include Optica’s Joseph Fraunhofer Award/Robert M. Burley Prize, SPIE’s Gold Medal and the Wolfram (Mathematica) Innovator Award.

His service to the community and Optica in particular has been extensive. Wyant was the society’s President in 2010, served on its Board of Directors and Executive Committee, and was the editor-in-chief of Applied Optics and an associate editor for a number of the society’s other journals, among numerous other positions.
**Esther Hoffman Beller Medal**

*In recognition of outstanding contributions to education in optical science and engineering*

**Julie Bentley**

University of Rochester, USA

*For her central role in shaping the optics education of countless undergraduate and graduate students*

Julie Bentley received her Ph.D. from the Institute of Optics, University of Rochester, USA. She is currently a professor at the Institute of Optics and has taught courses in geometrical optics, optical design and product design for more than 22 years. Previously, she managed a commercial team at Corning Tropel, USA, where she served as the link between the customer and the research-and-development groups. She used this experience to start her own successful optical design consulting business, Bentley Optical Design, and currently works on a wide variety of design projects from biomedical instruments for cancer screening to both consumer and military optics.

Bentley has published multiple books on lens design and teaches short courses to industrial partners all over the world. She has served as an *Optics Express* editor and on several Optica committees, including the program committees for the Education and Training in Optics & Photonics (ETOP) Conference, the International Optical Design Conference, and Frontiers in Optics. An Optica Fellow, she also received the University of Rochester’s prestigious Goergen Award for Excellence in Undergraduate Teaching.

**Max Born Award**

*In recognition of contributions to physical optics*

**Yuri Kivshar**

Australian National University, Australia

*For pioneering and ground-breaking research in nonlinear metamaterials and all-dielectric resonant met-photonics that derives unique optical functionalities from electric and magnetic dipolar and multipolar Mie-type resonances underpinning new discoveries in nonlinear and topological nanophotonics*

Yuri Kivshar received his Ph.D. in Kharkov, Ukraine. He was a Humboldt Fellow at the University of Duesseldorff, Germany, and served as a visiting fellow at several research centers and universities in the US and Europe. In 1993, Kivshar moved to Australia where he established the Nonlinear Physics Center at the Australian National University.

Kivshar is a world leader in photonics and metamaterials, recognized for his seminal contributions to the study of nonlinear and topological phenomena in light–matter interaction. He is one of the founders of all-dielectric resonant met photonics governed by the physics of Mie resonances in dielectric nanoparticles with high refractive index. His innovative ideas and high-impact, influential papers are driving several research fields.

He is currently a deputy editor of *Photonics Research* and has served on several Optica committees. He is a Fellow of Optica, APS, the Australian Academy of Science, the Institute of Physics and SPIE. His research has garnered many national and international awards, including the International Stephanos Pnevmatikos Award, the State Prize of Ukraine in Science and Technology, and the Humboldt Research Award.

**Stephen D. Fantone Distinguished Service Award**

*In recognition of outstanding service to Optica*

**Joseph A. Izatt**

Duke University, USA

*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*

Joseph A. Izatt received his Ph.D. from the Massachusetts Institute of Technology, USA. He is currently the Michael J. Fitzpatrick Professor of Engineering in the Pratt School of Engineering at Duke University. He co-founded Bioptigen and previously held positions at University Hospitals of Cleveland, USA, and Case Western Reserve University, USA.

Izatt is a longtime volunteer and leader who has helped shape and strengthen Optica’s conferences, publications and overall strategy. He has served on many committees and councils, including the Board of Editors, Publications Council, Board of Directors and Strategic Planning Committee. He was the founding editor of *Biomedical Optics Express* and editor of *Applied Optics* and the *Journal of the Optical Society of America B* (JOSA B).

In addition to his outstanding service, Izatt has made fundamental contributions to many coherence-based optical imaging technologies, especially optical coherence tomography (OCT). A highly cited author, he has published over 200 technical papers and more than 350 contributed conference presentations, delivered 135 invited lectures and presentations, and holds more than 75 US patents. He is a Fellow of Optica, the American Institute for Medical and Biological Engineering, the US National Academy of Inventors and SPIE.
Michael S. Feld Biophotonics Award
In recognition of innovative and influential contributions to the field of biophotonics, regardless of career stage

Valentina Emiliani
Vision Institute, CNRS, France
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.

Valentina Emiliani received her Ph.D. from La Sapienza University, Italy. After completing postdoctoral fellowships at the Max Born Institute, Germany, and the European Laboratory for Nonlinear Spectroscopy, Italy, she joined the Institute Jacques Monod, France. In 2005 she formed the Wavefront Engineering Microscopy group at Paris Descartes University, France. She moved with her team to the Vision Institute, where she is a CNRS research director and directs the Photonics Department.

Valentina and her group have pioneered the use of wavefront engineering for neuroscience. Precisely, they have combined approaches such as computer-generated holography, generalized phase contrast and temporal focusing with optogenetics to control neuronal activity with unprecedented spatiotemporal precision. Their findings paved the way to optogenetic manipulation of intact brain circuits with single-cell resolution, an essential methodology to perturb and activate neural circuits for interrogating brain function.

She is a recipient of the award “Coups d’élan pour la recherche française” from the Bettencourt-Shueller Foundation, the European Young Investigator Award, the Axia Chair, the European Research Council Advanced Grant, the “Médaille d’argent” from CNRS and the Maxime Dahan Prize.

Joseph Fraunhofer Award/Robert M. Burley Prize
In recognition of significant research accomplishments in the field of optical engineering

Aydogan Ozcan
University of California Los Angeles (UCLA), USA
For seminal optical engineering contributions to computational optical imaging, lens-free microscopy, holography and mobile optical sensing.

Aydogan Ozcan received his Ph.D. from Stanford University, USA. He is currently the Chancellor’s Professor and the Volgenau Chair for Engineering Innovation at UCLA and an HHMI Professor with the Howard Hughes Medical Institute, USA. He is also the associate director of the California NanoSystems Institute, USA.

Ozcan pioneered a suite of lens-free microscopy and on-chip holography techniques that are widely used in high-throughput imaging and lab-on-a-chip applications for rapidly screening micro/nanoscale objects over orders-of-magnitude-larger sample volumes, generating gigapixel microscopy images using field-portable instruments. His research on computational imaging, microscopy, mobile sensing and diagnostics created widely scalable mobile technologies for a variety of applications, which have the potential to dramatically increase the reach of advanced biomedical technologies to developing countries and resource limited settings.

He holds more than 50 patents and is a highly cited author who has published a book as well as over 800 co-authored peer-reviewed publications. He has received several awards for his work including the ICO Prize, the Presidential Early Career Award for Scientists and Engineers, and National Institutes of Health Director’s New Innovator Award. He is a Lifetime Fellow of Optica, the American Association for the Advancement of Science, the US National Academy of Inventors and SPIE, and a Fellow of the American Institute for Medical and Biological Engineering, APS, the Guggenheim Foundation, IEEE and the Royal Society of Chemistry.

The Joseph W. Goodman Book Writing Award
In recognition of a recent and influential book in the field of optics and photonics that has contributed significantly to research, teaching, business or industry (co-presented with SPIE)

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

Paul F. McManamon received his Ph.D. from Ohio State University, USA. He is founder and president of Exciting Technology LLC and the technical director of the Lidar and Optical Communications Institute (LOCI) at the University of Dayton. He previously served as the chief scientist for the US Air Force Research Lab (AFRL), Sensors Directorate.

His book is a useful reference as it covers lidar’s history, the components of a lidar system, how to build systems for popular applications, and more. The exam-
amples and exercises in each chapter ensure that technical concepts are well understood. The inclusion of Matlab codes allows lidar engineers to more conveniently run simulations to obtain estimates on lidar performance. And its highlights of the fundamental parameters, design options and tradeoffs are a value resource for lidar system designers.

A recognized leader in the field, McManamon has played an active role in lidar/electro-optics research and development for more than 40 years. He received the W.R.G. Baker Award, and is a Fellow of Optica, the Air Force Research Laboratory, the American Institute of Aeronautics and Astronautics, the Directed Energy Professional Society, IEEE, the Military Sensing Symposia and SPIE. His first book, Field Guide to Lidar, was published in 2015.

Nick Holonyak Jr. Award

In recognition of contributions to optics based on semiconductor-based devices and optical materials, including basic science and technological applications.

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

For his pioneering work in creating GaAs diode lasers and inventive contributions to compound semiconductors and laser physics

Marshall I. Nathan received his Ph.D. from Harvard University, USA. He began his career at IBM Corporation, USA, in the research division working in semiconductor physics, particularly hot-electron phenomena and tunnel diodes. He moved to IBM’s Thomas J. Watson Research Center and began work on the luminescence of III–V semiconductors. He joined the faculty of the University of Minnesota in 1987 and is currently a professor emeritus.

In 1962, Nathan and colleagues observed stimulated emission in gallium arsenide (GaAs), thus demonstrating the viability of the injection laser. He continued his pioneering studies of the physics associated with laser action in semiconductors and also conducted research on hot electron phenomena, Raman scattering, laser annealing and semiconductor microstructures.

Nathan has been an active volunteer, serving on conference and award committees, organizing conferences on semiconductor physics, and serving as the secretary-treasurer for the APS Division of Solid State Physics. He is a Fellow of IEEE and APS and a member of the US National Academy of Engineering. His awards include the IEEE David Sarnoff Award and IBM Outstanding Contribution Award, Semiconductor Laser.

Robert E. Hopkins Leadership Award

In recognition of significant impact on the field of optics or a significant contribution to society

Andrea Armani
University of Southern California (USC), USA

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

Andrea Armani received her Ph.D. from the California Institute of Technology, USA. She is currently the Vice Dean of New Initiatives in the Viterbi School of Engineering, the Ray Irani Professor of Chemical Engineering and Materials Science and the director of the John D. O’Brien Nanofabrication Laboratory at USC.

Armani is internationally regarded for her pioneering approach to building online community, mentoring and sharing technical information and educational resources. As the founder and chair of the Photonics Online Meetup (POM), the first entirely online photonics conference, she is making high-quality technical information accessible to the global community. Established before the current global health crisis, her vision served as a model for many professional scientific organizations seeking opportunities to engage without face-to-face interactions. Leveraging the success of POM, she hosted an online Ph.D. workshop and an Academic Career Workshop. She also maintains a host of resources on her website that provide information on faculty searches, sample interview questions, teaching-statement advice and information about issues that confront new assistant professors.

She is the feature editor of Optics Letters and a Fellow of Optica, the American Association for the Advancement of Science, the US National Academy of Inventors and SPIE. She has been recognized with several awards including the Office of Naval Research Young Investigator Award, the Presidential Early Career Award for Scientists and Engineers, and the USC Mellon Mentoring Award for Undergraduate Mentoring.
Andrew Forbes received his Ph.D. from the University of Natal, South Africa. He is currently a Distinguished Professor in the School of Physics at the University of Witwatersrand, where he established a new laboratory for structured light. Forbes’ leadership has transformed the advancement of photonics in Africa. He is a founding member of the Photonics Initiative of South Africa (PISA), which aims to accelerate and grow photonics research and impact in South Africa, and an initiator of South Africa’s Quantum Technology Initiative. He is an active participant in the African Laser Centre, organizing and hosting numerous training events in South Africa. He also strives to increase the visibility of South African research initiatives internationally, coordinating events and programs with global organizations such as Optica.

He serves on many advisory panels, conference committees, and journals, and is presently the editor-in-chief of the Journal of Optics. His contributions have been recognized through several national awards, as well as the Georg Forster Prize from the Alexander von Humboldt Foundation and the South African Institute of Physics Gold Medal, the highest award for physics in South Africa. He is a Fellow of Optica, the South African Institute of Physics and SPIE, and an elected member of the Academy of Science of South Africa.

Edwin Land Medal

In recognition of pioneering work empowered by scientific research to create inventions, technologies and products (co-presented with the Society for Imaging Science and Technology)

Min Gu
University of Shanghai for Science and Technology (USST), China
For outstanding contributions to novel displays and diffractive optics that led to commercial products and widespread applications, especially for augmented reality, virtual reality, and imaging devices

Min Gu received his Ph.D. from Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China. He is currently executive chancellor of USST and an honorary professor of RMIT University, Australia. Prior to that, he was a distinguished professor and associate deputy vice-chancellor at RMIT, and a Laureate Fellow of the Australian Research Council, a university distinguished professor, and pro vice-chancellor at Swinburne University of Technology, Australia.

Gu is a leading authority in nanophotonics and biophotonics, with internationally renowned expertise in three-dimensional optical-imaging theory. His research has led to significant impacts on societal challenges in information processing, 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.

Emmett N. Leith Medal

In recognition of seminal contributions to the field of optical information processing

Shin-Tson Wu
University of Central Florida, USA
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

Shin-Tson Wu received his Ph.D. from the University of Southern California, USA. He is currently Pegasus Professor at CREOL, The College of Optics and Photonics, University of Central Florida (UCF), USA. Prior to joining UCF, he was with Hughes Research Laboratories, USA where the first laser was invented.

Wu is a technical leader in the field of display and imaging technologies. He has performed groundbreaking work in developing new liquid crystal materials, devices, and applications. His pioneering contributions have extensively impacted the global display industry. His prolific inventions, scientific discoveries and technology development of advanced LCDs and imaging devices have made—and will continue to make—a tangible impact on the quality of life, economic development and welfare of society. His current research focuses on augmented reality and virtual reality, including light engines, optical systems and display materials.

An active volunteer, he has served on the Optica Board of Directors, Publications Council and Board of Editors, and was a founding editor-in-chief of the IEEE/Optica Journal of Display Technology. He is a Charter Fellow of the US National Academy of Inventors, a Fellow of Optica, IEEE, the Society for Information Display and SPIE, and was inducted to the inaugural class of the Florida Inventors Hall of Fame.

Sang Soo Lee Award

In recognition of outstanding leadership in founding or growing the optics and photonics community locally (co-presented with Optical Society of Korea)

Andrew Forbes
University of the Witwatersrand, South Africa
For advancing photonics in South Africa through strategic leadership in executing national photonics programmes, high-impact research and education, and mentorship of African researchers

Andrew Forbes received his Ph.D. from the University of Natal, South Africa. He is currently a Distinguished Professor in the School of Physics at the University of Witwatersrand, where he established a new laboratory for structured light. Forbes’ leadership has transformed the advancement of photonics in Africa. He is a founding member of the Photonics Initiative of South Africa (PISA), which aims to accelerate and grow photonics research and impact in South Africa, and an initiator of South Africa’s Quantum Technology Initiative. He is an active participant in the African Laser Centre, organizing and hosting numerous training events in South Africa. He also strives to increase the visibility of South African research initiatives internationally, coordinating events and programs with global organizations such as Optica.

He serves on many advisory panels, conference committees, and journals, and is presently the editor-in-chief of the Journal of Optics. His contributions have been recognized through several national awards, as well as the Georg Forster Prize from the Alexander von Humboldt Foundation and the South African Institute of Physics Gold Medal, the highest award for physics in South Africa. He is a Fellow of Optica, the South African Institute of Physics and SPIE, and an elected member of the Academy of Science of South Africa.
technology. He has pioneered nanoscale information optics, including nanometric optical data storage and holography using advanced nanomaterials, through multi-dimensional division including orbital angular momentum and vectorial domains. He is a sole author of two standard reference books and has over 550 publications in nano- and biophotonics.

An active volunteer, he has served Optica and other organizations in several roles including as member of the Optica Board of Directors, vice president of the Bureau of the ICO and vice president of the Chinese Society of Optical Engineering. He has received several awards including the Einstein Professorship Award, the Victoria Prize for Science and Innovation and the Dennis Gabor Award. He is a Fellow of Optica, the American Institute of Physics, the Australian Academy of Science, the Australian Academy of Technological Sciences and Engineering, IEEE, the Institute of Physics and SPIE. He is also a Foreign Fellow of the Chinese Academy of Engineering and the Chinese Optical Society.

Ellis R. Lippincott Award
In recognition of contributions to vibrational spectroscopy (presented with the Coblentz Society and the Society for Applied Spectroscopy)

Martin Zanni
University of Wisconsin–Madison, USA
For innovative contributions to the technology and application of two-dimensional infrared spectroscopy

Martin T. Zanni received his Ph.D. from the University of California Berkeley, USA, and was a National Institutes of Health Postdoctoral Fellow at the University of Pennsylvania, USA. He is currently the Meloche-Bascom Professor of Chemistry at the University of Wisconsin–Madison.

Zanni is one of the early pioneers of 2D IR spectroscopy and has made many technological innovations that have broadened the capabilities and scope for a wide range of multidimensional spectroscopies and microscopies. He utilizes these new techniques to study topics in biophysics, chemical physics, photovoltaics, and surfaces. He founded PhaseTech Spectroscopy Inc., which is the first company to commercialize 2D IR and 2D Electronic spectroscopies.

He has received many national and international accolades for his research. Notably, he is the only person to have received the American Chemical Society Nobel Laureate Signature Award as both a student and a mentor and the first person to receive both the Craver and the Coblentz Awards. He is a Fellow of Optica and APS.

Adolph Lomb Medal
In recognition of noteworthy contributions made to optics at an early career stage

Ido Kaminer
Technion–Israel Institute of Technology, Israel
For pioneering contributions which led to the creation of a paradigm shift in light–matter interactions of photonic quasiparticles

Ido Kaminer received his Ph.D. from the Technion, and is currently an assistant professor of electrical engineering. In his Ph.D. research, he discovered new classes of accelerating beams in nonlinear optics and electromagnetism, and as a postdoc at Massachusetts Institute of Technology, USA, he established the foundations of macroscopic quantum electrodynamics (MQED) for photonic quasiparticles and used it to find a way to enable forbidden electronic transitions in atoms.

As a faculty member at the Technion, he performed the first experiment on free-electron interaction with quantum light, demonstrating that the quantum statistics of photons can be imprinted on the electron. His scientific contributions helped create the new area of free-electron quantum optics.

He was recently elected to the Israeli Young Academy, and has won multiple awards and grants, including the European Research Council Starting Grant, the Krill Prize for Excellence in Scientific Research, and the APS award for Outstanding Doctoral Dissertation in Laser Science. He is also the laureate of the 2021 Blavatnik Award in Physical Sciences & Engineering in Israel.

C.E.K. Mees Medal
In recognition of an original use of optics across multiple fields

Norbert F. Scherer
University of Chicago, USA
For seminal contributions to optical science by developing novel methods and applications in ultrafast nonlinear spectroscopy, single molecule microscopy, nanoplasmics, optical vector beam spectroscopy, and optical trapping, optical matter and nanomachines

Norbert F. Scherer received his Ph.D. from the California Institute of Technology, USA. He was a National Science Foundation Postdoctoral Fellow and is currently a professor of chemistry, both at the University of Chicago.
Scherer’s research accomplishments span many fields, from single-molecule biophysics to ultrafast chemical reaction dynamics to optical physics. His graduate research with Ahmed Zewail founded the field of femtochemistry, and his postdoctoral research on controlling optical phase is the basis for modern 2D optical and infrared ultrafast spectroscopies. He first demonstrated simultaneous nanometer and femtosecond space–time-resolved electron dynamics on metal surfaces. He was also the first to demonstrate super-resolution localization of multiple single-molecule fluorophores and optically trap and orientationally control single plasmonic nanoparticles. His current focus is controlling non-reciprocal forces as an outgrowth of his pioneering work on nanoparticle-based optical matter and creation of stochastic optical matter machines, and optical magnetism in meta-atom materials.

He has mentored more than 35 graduate students and 40 postdoctoral students, and published over 200 papers. He is Fellow of Optica and APS. He has received several awards including Optica’s Ellis R. Lippincott Award, the Peter Debye Award in Physical Chemistry, the Arthur L. Schawlow Prize in Laser Science, the E. Bright Wilson Award for Spectroscopy and the Ahmed Zewail Award in Ultrafast Science and Technology.

William F. Meggers Award
In recognition of outstanding work in spectroscopy

Michael D. Fayer
Stanford University, USA
For seminal developments in ultrafast nonlinear spectroscopy, which have heavily influenced the chemical physics spectroscopy landscape

Michael D. Fayer received his Ph.D. from the University of California Berkeley, USA. He has been teaching at Stanford University since 1974 and is currently the David Mulvane Ehrsam and Edward Curtis Franklin Professor of Chemistry.

Fayer is a pioneer in the development and application of ultrafast nonlinear laser techniques for the study of complex molecular systems ranging from solids at liquid-helium temperatures to room-temperature molecular materials with mesoscopic structures.

In the last several decades, his main focus has been on molecular dynamics studied with ultrafast infrared nonlinear experiments. He has played a central role in the development and application of 2D infrared spectroscopy. His work has had profound impacts on modern physical chemistry and materials science, and his methods have spread worldwide.

He is a Fellow of Optica, the US National Academy of Sciences and the American Academy of Arts and Sciences. He has received several awards including Optica’s Ellis R. Lippincott Award, the Peter Debye Award in Physical Chemistry, the Arthur L. Schawlow Prize in Laser Science, the E. Bright Wilson Award for Spectroscopy and the Ahmed Zewail Award in Ultrafast Science and Technology.

David Richardson Medal
In recognition of significant contributions to optical engineering, primarily in the commercial and industrial sector

Jim Tatum
Dallas Quantum Devices, USA
For significant contributions to the development and commercialization of VCSEL technology

Jim Tatum received his Ph.D. from the University of Texas at Dallas, USA. He is founder and CEO of Dallas Quantum Devices and previously worked at Honeywell International Inc, USA, and Finisar Corporation, USA.

Since the start of his career in vertical-cavity surface-emitting lasers (VCSELs), Tatum has been a leader in their research, development and commercialization. He was a part of the Honeywell team that offered the industry’s first production VCSEL in 1996. Subsequently, he fostered and led the team that commercialized data-communications VCSELs at speeds up to 28 Gbps, developed and productized single-mode polarization-controlled VCSELs, and pioneered the development of 2D VCSEL arrays in consumer electronics. Hundreds of millions of these VCSELs are in use and continue to be deployed today.

Tatum has published more than 75 technical papers and holds over 50 patents. He has been invited to give numerous presentations on a variety of topics and co-authored VCSEL Industry: Communication and Sensing.
Kevin P. Thompson Optical Design Innovator Award

In recognition of contributions to lens design, optical engineering or metrology at an early career stage

Heejoo Choi
University of Arizona, USA
For innovative design of a UV cross-dispersion space telescope and engineering of a laser-truss Large Binocular Telescope metrology system

Heejoo Choi received his Ph.D. from Pusan National University, Republic of Korea. He is currently an assistant research professor at the James C. Wyant College of Optical Science, University of Arizona, and an optical scientist at the Large Binocular Telescope.

His specialties cover optical design and metrology for academia and industrial applications such as freeform optics, cellphone lenses, and wafers in semiconductor facilities. He has also been contributing to the design, modeling, and testing of space projects that have unprecedented scale and approaches. His research focuses on the unique and efficient optical solutions for pioneer space or on-Earth observatories.

Choi is a dedicated volunteer. He serves as a guest editor for the Multidisciplinary Digital Publishing Institute (MDPI) journal Photonics and is an active reviewer, conference co-chair and committee member. He also volunteers his time for students, participating in optical-design workshops and other training programs.

Edgar D. Tillyer Award

In recognition of distinguished work in the field of vision

Mary Hayhoe
University of Texas at Austin, USA
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

Mary Hayhoe received her Ph.D. from the University of California at San Diego, USA. She is currently a professor in the Center for Perceptual Systems at the University of Texas Austin. Previously, she was a member of the Center for Visual Sciences at the University of Rochester, USA.

Hayhoe has been a leader in developing virtual environments and experimental paradigms for the investigation of natural visually guided behavior, and for innovative use of technology for recording eye, head and body movements in natural contexts. Her work reveals the factors that influence sensory-motor decisions in the context of active behavior, and how gaze behavior relates to attention, working memory, and cognitive goals.

She is on the Editorial Board of the Journal of Vision. She is a Fellow of Optica and the Society of Experimental Psychologists, and received the Davida Teller Award of the Vision Sciences Society.

Charles Hard Townes Medal

In recognition of contributions to quantum electronics

Girish S. Agarwal
Texas A&M University, USA
For discoveries in theoretical quantum optics especially vacuum-induced coherences, photon-added coherent states, nonclassical cat states for qubits via engineered many-body interactions, and transparency in optomechanical systems

Girish S. Agarwal received his Ph.D. from the University of Rochester, USA. He is currently a distinguished university professor at Texas A&M University. He also holds the INFO-SYS Foundation Chair at the Indian Institute of Science and held the J.R.D. Tata Chair at The Tata Institute of Fundamental Research and Einstein Professorship, Indian National Science Academy.

Agarwal is an influential physicist with magisterial works in quantum optics. A key part of his work involved studying the nonclassical properties of light and how this light interacts with atoms, leading to nonclassical states like cat states of many-qubit systems. He has several firsts to his credit: development of quantum statistical framework for studying cooperative effects like superradiance; fluctuation dissipation theorems for nonequilibrium systems; quantum electrodynamics with anisotropic vacuum; surface-excitation-produced enhancement of QED effects; enhancement of the nonlinear optical effects and control of phase matching with control electromagnetic fields; and sample-size dependence of the vacuum Rabi splittings.

He has published more than 700 papers and authored two books on quantum optics. He is a Fellow of Optica, APS, the Indian National Science Academy, The Royal Society, and The World Academy of Sciences (TWAS). His work has been recognized with Optica’s Max Born Award, the TWAS Award in Physics and the Humboldt Research Award.
John Tyndall Award

In recognition of contributions to fiber optic technology (presented with the IEEE Photonics Society)

Meint Smit
Eindhoven University of Technology (TU/e), Netherlands

For leadership in building a photonic integration ecosystem, and pioneering contributions to key photonic devices including the arrayed waveguide grating

Meint Smit received his Ph.D. from Delft University of Technology, Netherlands. He is currently a full professor in the Department of Electrical Engineering at TU/e, where he leads the Photonic Integration Group at the COBRA Research Institute. Previously, he was the leader of the Photonic Integrated Circuits Group at Delft University.

Smit started his research in photonic integration in 1981, invented the Arrayed Waveguide Grating and was closely involved in the introduction of MMI-couplers, key components in Photonic ICs. He is the founder of JePPIX, the Joint European Platform for Photonic Integration of Components and Circuits, and he is highly involved in the development of the InP-based photonic foundry system in Europe. Smit is an IEEE Fellow and has received an ERC Advanced Grant, a LEOS Technical Achievement Award and a Rank Prize for Optoelectronics.

Herbert Walther Award

In recognition of distinguished contributions in quantum optics and atomic physics as well as leadership in the international scientific community (presented with Deutsche Physikalische Gesellschaft)

Jun Ye
JILA University of Colorado
Boulder, USA

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

Jun Ye received his Ph.D. from the University of Colorado Boulder, USA, under the supervision of Nobel laureate and Optica Honorary Member John Hall. He is currently a professor adjoint of physics. He was a Milikan Postdoctoral Fellow at the California Institute of Technology, USA, before returning to the University of Colorado Boulder. His research focuses on the frontiers of light-matter interactions, including precision measurement, quantum science, ultracold matter and frequency metrology.

A Fellow of JILA and the US National Institute of Standards and Technology, he has co-authored 380 papers and delivered 600 invited talks. Ye is a Fellow of Optica and APS and a member of the US National Academy of Sciences. His numerous awards and honors include Optica’s Adolph Lomb Medal and William F. Meggers Award, the Presidential Rank Award, Norman F. Ramsey Prize and the Breakthrough Prize in Fundamental Physics.

R.W. Wood Prize

In recognition of an outstanding discovery, scientific or technological achievement or invention

Shanhui Fan
Stanford University, USA

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

Shanhui Fan received his Ph.D. from the Massachusetts Institute of Technology, USA. He is currently the Joseph and Hon Mai Goodman Professor in the School of Engineering, a professor of electrical engineering, a professor of applied physics (by courtesy), and a Senior Fellow of the Precourt Institute for Energy at Stanford University.

Fan’s research interests are in fundamental studies of solid-state and photonic structures and devices, especially photonic crystals, plasmonics and metamaterials, and applications of these structures in energy and information technology. He was the first to demonstrate that the coldness of space, relative to Earth, can be a major energy source for mankind. His work has opened a new direction in renewable-energy research by highlighting the potential for harvesting the coldness of universe.

One of the most cited scientists in photonics, Fan has published more than 600 refereed journal articles, has given over 380 plenary/keynote/invited talks, and holds more than 70 US patents. He has received many awards including Optica’s Adolph Lomb Medal, the National Science Foundation Career Award, a David and Lucile Packard Fellowship in Science and Engineering and a Simons Investigator in Physics. He is a Clarivate Highly Cited Researcher in Physics, and a Fellow of Optica, APS, IEEE, and SPIE.
Thank You, 2022 Award Selection Committee Members!

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Miles Padgett, Chair
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(Part with Society for Imaging Science and Technology)
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(Part with Optical Society of Korea)
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Groot Gregory
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Gabriella Cincotti
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Koji Sugioaka, Chair
Christina Lim, Past Chair
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* Denotes Optica representative on joint society committees

Call for 2023 Award and Medal Nominations

Join us in celebrating the field’s technical, research, engineering, education, business, leadership and service accomplishments. Nominations for most 2023 awards and medals are due 1 October. Please take advantage of this unique opportunity to recognize your colleagues’ extraordinary achievements.

Visit optica.org/AwardCategories to find the most appropriate recognition.

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