

# 2021 OSA Awards and Medals

OSA congratulates the following 21 recipients of its prestigious awards and medals for their outstanding contributions to science, industry, research, engineering, education and society.

The OSA Board of Directors would like to thank the dedicated nominators, references and selection committee members for the critical roles they have undertaken to make this program possible. Learn more or submit a nomination at [www.osa.org/awards](http://www.osa.org/awards).

## Frederic Ives Medal/Jarus W. Quinn Prize

*The highest award conferred by OSA, for overall distinction in optics*

### Federico Capasso

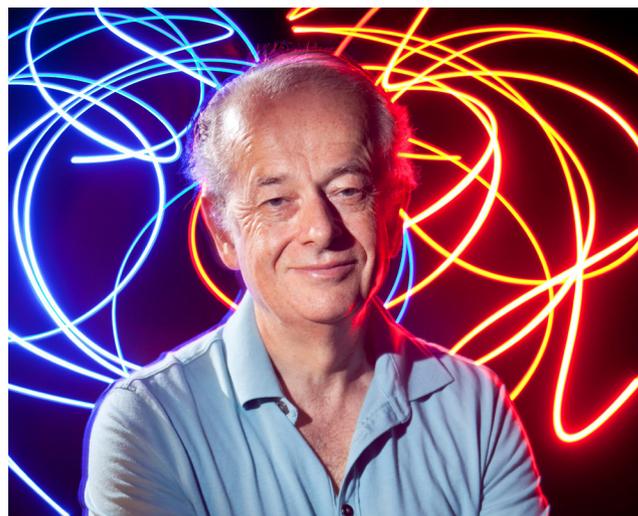
John A. Paulson School of Engineering and Applied Sciences, Harvard University, USA

*For seminal and wide-ranging contributions to optical physics, quantum electronics and nanophotonics*

Federico Capasso received his Ph.D., summa cum laude, from the University of Rome, Italy. After researching fiber optics at Fondazione Bordonni, Italy, he joined Bell Labs, USA. In addition to his research activity, Capasso held several management positions at Bell Labs including head of the Quantum Phenomena and Device Research Department and the Semiconductor Physics Research Department and vice president of Physical Research. He joined Harvard University in 2003.

Capasso has made major contributions to the study of quantum electrodynamical forces known as Casimir forces. He used the Casimir effect (the attraction between metal surfaces in vacuum due to its zero-point energy) to control the motion of micro-electro-mechanical systems (MEMS). He demonstrated novel devices (Casimir actuators and oscillators), setting limits to the scaling of MEMS technology, and with his collaborators Jeremy Munday and Adrian Parsegian was the first to measure a repulsive Casimir force.

His current research in quantum electronics deals with very-high-power continuous-wave quantum cascade lasers; with the design of new light sources based on giant optical nonlinearities in quantum wells, such as widely tunable sources of terahertz radiation based on difference-frequency generation; and with plasmonics. His group has demonstrated a new class of optical antennas and plasmonic collimators that they have used to design the near-field and far-field of semiconductor lasers, achieving ultrahigh-intensity, deep-



Courtesy of F. Capasso

subwavelength-size laser spots, laser beams with greatly reduced divergence and multibeam lasers. The group has also showed that suitably designed plasmonic interfaces consisting of optically thin arrays of optical nanoantennas lead to a powerful generalization of the centuries-old laws of reflection and refraction. They form the basis of “flat optics” based on metasurfaces.

Capasso is a Fellow of numerous societies including OSA, the American Academy of Arts and Sciences, the American Physical Society, IEEE, the Institute of Physics and SPIE. He is a member of the U.S. National Academy of Sciences, the U.S. National Academy of Engineering, Academia Europaea and Accademia dei Lincei. His many awards and honors include OSA’s R.W. Wood Prize, the Humboldt Research Award, the Guglielmo Marconi Science Award, the Matteucci Medal, the Prize for Applied Aspects of Quantum Electronics and Optics, the Rumford Prize, the Arthur Schawlow Prize in Laser Science and the SPIE Gold Medal.

## Esther Hoffman Beller Medal

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



### Nicholas Massa

Springfield Technical Community College (STCC), USA

*For outstanding leadership in photonics technician education, including the development and dissemination of innovative educational materials*

Nicholas Massa received his Ph.D. from the University of Connecticut, USA. Currently, he is professor and department chair of the Optics and Photonics Technology Department at STCC. He is a Fellow of OSA.

In addition to his role at STCC, he has been the principal investigator or co-principal investigator on more than a dozen grant-funded projects to develop curriculum materials, write technician skill standards and create novel pedagogies that have been disseminated through global conference workshops. He has educated nearly 600 technicians for the photonics industry and continues to grow and improve his program at STCC.

Massa is the coauthor of *LIGHT—Introduction to Optics and Photonics*, which fills a need for textbooks at the technician level. More than 300 secondary and post-secondary educators have received training and assistance through his professional-development workshops on photonics and student-centered technician education, impacting tens of thousands of students. He has served on the OSA Membership, Education and Services Committee and has been the faculty advisor of the STCC OSA Student Chapter since its inception in 2011.

## Max Born Award

*In recognition of contributions to physical optics*



### Anne L'Huillier

Lund University, Sweden

*For pioneering work in ultrafast laser science and attosecond physics, realizing and understanding high-harmonic generation and applying it to time-resolved imaging of electron motion in atoms and molecules*

Anne L'Huillier, the first woman to win the Max Born Award, received her Ph.D. from Commissariat à l'Énergie Atomique (CEA) and Université Pierre et Marie Curie (Paris VI), France. She held a permanent research position at CEA before joining Lund University, where she is currently a professor in atomic physics. She is a Fellow of

OSA and the American Physical Society and an international member of the U.S. National Academy of Science.

L'Huillier is one of the pioneers in the research fields of high-harmonic generation and attosecond science. In 1988, she participated in one of the first experimental demonstrations of the highly nonlinear process of high-order generation. She contributed to the theoretical understanding of these processes, including the strong-field atomic response and propagation in the nonlinear medium. She was also one of the first researchers to see the potential to use the extreme ultraviolet pulses that are generated through high-harmonic generation to produce even shorter pulses.

L'Huillier's recent work using attosecond pulses has been focused on the fundamental process of photo-ionization. Using attosecond pulses, she has demonstrated that it is possible to probe the associated time delay in the photo-ionization process in many different systems.

## Stephen D. Fantone Distinguished Service Award

*In recognition of outstanding service to OSA*



### Anthony M. Johnson

University of Maryland Baltimore County (UMBC), USA

*For decades of principled leadership and steadfast service to The Optical Society and to the optics community, and especially for serving as a tireless ambassador for OSA*

Anthony M. Johnson received his Ph.D. from City College of New York, USA. After spending 14 years with AT&T Bell Laboratories, USA, Johnson served as chairperson and distinguished professor at the New Jersey Institute of Technology, USA. He is currently director of the Center for Advanced Study in Photonics Research and professor in the departments of Physics and Computer Science and Electrical Engineering at the UMBC. He is a Fellow of OSA, the American Association for the Advancement of Science, the American Physical Society, IEEE and the National Society of Black Physicists.

Johnson has served in numerous leadership roles for OSA, including director-at-large on OSA's Board of Directors, chair of the Women & Minorities Committee and chair of the Awards Council. He was the 2002 OSA President and remains active with OSA. He currently sits on the Presidential Advisory Committee (PAC) and serves as a member of the OSA Diversity, Equity and Inclusion Rapid Action Committee (DEI RAC). In addition to his service to OSA, Johnson is an active leader in the National Society of Black Physicists, the American Physical Society and IEEE, and he supported the African Laser Atomic, Molecular

and Optical Sciences Network by establishing the African Optics and Photonics Society.

## Michael S. Feld Biophotonics Award

*In recognition of innovative and influential contributions to the field of biophotonics, regardless of career stage*



### Arjun Yodh

University of Pennsylvania, USA

*For pioneering research on optical sensing in scattering media, especially diffuse optical and correlation spectroscopy and tomography, and for advancing the field of biophotonics through mentorship*

Arjun Yodh received his Ph.D. from Harvard University, USA. He completed postdoctoral research at AT&T Bell Laboratories, USA, and is currently the James M. Skinner Professor of Science at the University of Pennsylvania. He is a Fellow of OSA, the American Association for Advancement of Science, the American Institute for Medical and Biological Engineering and the American Physical Society.

Yodh is a pioneer in the field of biophotonics, recognized for his work and contributions to developing the theoretical framework and clinical translation of diffuse optical spectroscopy and tomography technologies. He and his group were among the first to predict and experimentally demonstrate wavelike propagation properties of diffuse photon density wave and to develop the image reconstruction algorithms needed to generate 3D tomographic images based on diffuse optical and diffuse correlation measurements.

His more recent work includes demonstrating and clinically translating concepts in light diffusion for noninvasive imaging and monitoring of tissue blood flow, hemodynamics, metabolic responses and therapeutics in cancer and the brain. He holds ten patents and has published over 350 journal articles. Yodh is also a dedicated mentor, advising more than 100 Ph.D. students and postdoctoral associates.

## Joseph Fraunhofer Award/ Robert M. Burley Prize

*In recognition of significant research accomplishments in the field of optical engineering*



### Zeev Zalevsky

Bar-Ilan University, Israel

*For significant contributions to the field of optical super-resolution including the invention of many novel concepts bypassing Abbe's limits of diffraction and the geometric limits set by the sensor*

Zeev Zalevsky received his Ph.D. from Tel-Aviv University, Israel. He is currently a full professor in the faculty of engineering at Bar-Ilan University. In addition, he is the director of the Nano-Photonics Center at the Institute of Nanotechnology and Advanced Materials at Bar-Ilan. He is a Fellow of OSA, the American National Academy of Inventors, the European Optical Society, IEEE, the Institution of Engineering and Technology, the Institute of Physics, the Society for Imaging of Science & Technology and SPIE.

Zalevsky has made many important contributions to the field of optical super-resolution. He formulated early basic concepts of optical super-resolution and presented ideas that can be traced to many of the super-resolving imaging methods used today in microscopy, such as NSOM, structured-light imaging, localization microscopy and others. He has introduced basic concepts involving time, field of view, wavelength, polarization and coherence multiplexing for bypassing diffraction-limited resolution limitations. His work is published widely, and many of his inventions and patents have been commercialized into startup companies, benefiting not only academia but industry as well.

## Nick Holonyak Jr. Award

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



Fraunhofer U.K.

### Martin D. Dawson

University of Strathclyde and Fraunhofer, UK

*For wide-ranging contributions to the development and application of III-V semiconductor devices especially including gallium nitride micro-LEDs and optically-pumped semiconductor lasers*

Martin D. Dawson received his Ph.D. in laser physics from Imperial College London, UK. He is director of research in the University of Strathclyde's Institute of Photonics, which he helped establish 20 years ago, and was appointed inaugural head of the Fraunhofer Centre for Applied Photonics. He is a Fellow of OSA, IEEE, the Institute of Physics and the Royal Society of Edinburgh.

Dawson is a pioneer and visionary in both the development and application of GaN-based micro-LED technology. He introduced and has pursued the novel vision of GaN micro-LEDs for micro-display, communications and instrumentation applications, recognizing quickly the benefits of interfacing this technology to custom-designed CMOS electronics and its compatibility with APDs and single-photon detectors. In 2009, he founded the micro-LED company m-LED Ltd., and sold it in 2016 to Facebook/Oculus. He is also

known for his work with VCSELs and has transferred many of his VCSEL technologies to industry.

## Robert E. Hopkins Leadership Award

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



### Pierre Chavel

Institut d'Optique, France

*For outstanding support and promotion of optics throughout Europe, and exceptional leadership in institutions and scientific societies such as OSA, SPIE, ICO, EOS and SFO*

Pierre Chavel received his D.Sc. in physics from the Université Paris-Sud, Orsay, France. Since 1972, he has been a research scientist at the Centre National de la Recherche Scientifique (CNRS), and is the director of Laboratoire Charles Fabry, a joint research facility of CNRS and Institut d'Optique. He is a Fellow of OSA, the European Optical Society and SPIE.

Chavel's contribution to optics stems from his exceptional record of service. It is due to his efforts that the Société Française d'Optique (SFO) was founded in 1983 and subsequently developed under his term as secretary and treasurer. He also contributed to the development of the European Optical Society (EOS) and was one of its first members. Further, he served 12 years as secretary general of the International Commission for Optics (ICO). Under his guidance, the number of member countries grew from 38 to 51.

Chavel has been active in OSA, serving in many volunteer roles including on the OSA Board of Directors, the OSA Foundation Board, Strategic Planning Council, Public Policy Council and more. In addition to his years of service to the field, he is an established researcher, with over 120 articles in refereed journals and 12 patents, and he has edited or co-edited several books.

## Edwin Land Medal

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



### Joseph A. Izatt

Duke University, USA

*For foundational contributions to the invention, development and commercialization of optical coherence-based technologies for in vivo biomedical imaging, and for the education and mentoring of distinguished scientists and engineers*

Joseph A. Izatt received his Ph.D. in nuclear engineering from Massachusetts Institute of Technology, USA. Following post-doctoral work at the Massachusetts Institute of Technology, USA, he held positions at University Hospitals of Cleveland, USA, and Case Western Reserve University, USA, and co-founded Biotigen. He is currently the Michael J. Fitzpatrick Professor of Engineering in the Edmund T. Pratt, Jr. School of Engineering. He is a highly cited author and holds over 75 U.S. patents. He is a Fellow of OSA, the American Institute for Medical and Biological Engineering, the National Academy of Inventors and SPIE.

Izatt has made fundamental contributions to many coherence-based optical imaging technologies, especially optical coherence tomography (OCT). His accomplishments include playing an integral role in the initial development of retinal OCT, anterior-segment OCT, endoscopic OCT, OCT image processing and segmentation, intrasurgical OCT and OCT-guided robotic ophthalmic surgery. His group also pioneered the combination of OCT and scanning laser ophthalmoscopy in a compact hand-held format, demonstrating the first *in vivo* imaging of photoreceptors in neonatal infant eyes.

Izatt is a successful entrepreneur. He serves as a mentor and educator to a diverse group of students and collaborates with engineers, scientists and clinicians in academia and industry.

## Emmett N. Leith Medal

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



### Bahram Javidi

University of Connecticut, USA

*For exceptional innovation and transformative technological impact on the field of information optics, including pioneering contributions to digital holography for life sciences, information security, optical sensing, and processing of photon-starved scenes*

Bahram Javidi received his Ph.D. from Pennsylvania State University, USA. He has held visiting positions at Michigan State University, USA, the Massachusetts Institute of Technology, USA, the University of Stuttgart, Germany, and Hanscom Air Force Base, USA. He is currently the Board of Trustees Distinguished Professor at the University of Connecticut. He is Fellow of OSA, the American Institute for Medical and Biological Engineering, the European Optical Society, IEEE, Imaging Science and Technology, the Institute of Physics and SPIE. He received OSA's C.E.K Mees Medal in 2019 and its Joseph Fraunhofer Award/Robert M. Burley Prize in 2018.

Javidi's impact has been felt on a range of technologies related to information optics, digital holography and optical imaging. He is a pioneer in the field of dynamic 3D integral imaging and has contributed a number of breakthroughs in the field.

Javidi has substantially advanced the field of modern 3D integral imaging, and has made extraordinary contributions to the field of biophotonic sensors for automated disease identification using digital holography. His work has gained support from the U.S. Department of Defense as well as a number of companies including Nikon, Lockheed Martin, Samsung and Honeywell.

## Ellis R. Lippincott Award

*In recognition of contributions to vibrational spectroscopy (presented with the Coblenz Society and the Society for Applied Spectroscopy)*



L.B. Stauffer, University of Illinois at Urbana-Champaign

### Rohit Bhargava

University of Illinois at Urbana-Champaign, USA  
*For contributions to the fundamental physics and instrument engineering of mid-IR microscopy and its applications to medical imaging*

Rohit Bhargava received his Ph.D. from Case Western Reserve University, USA. Today, he is Founder

Professor of Engineering and serves as the director of the Cancer Center at the University of Illinois. His primary appointment is in the department of bioengineering, with joint appointments in chemistry and several engineering departments as well as in the Carle Illinois College of Medicine. He is a Fellow of the American Institute for Medical and Biological Engineering and the Society for Applied Spectroscopy.

Bhargava is the worldwide leader in IR micro-spectroscopy and imaging. Bhargava and collaborators have enabled the development of a complete theory for IR microscopy and nanoscopy over the last decade, forming the theoretical foundation of IR imaging.

Bhargava has also been able to translate fundamental scientific understanding to practical spectrometers by working with industry. This work has resulted in "high definition" imaging, now adopted by all IR microscopy manufacturers. Additionally, Bhargava has opened the field of using high-performance IR imaging for pathology, with studies that show how conventional pathology can be made all-digital and highly accurate.

## Adolph Lomb Medal

*In recognition of noteworthy contributions made to optics at an early career stage*



### Laura Waller

University of California Berkeley, USA  
*For important contributions to the advancement of computational microscopy and its applications*

Laura Waller received her Ph.D. from the Massachusetts Institute of Technology, USA. She was a postdoctoral research associate at Princeton University, USA, before joining the University of California, Berkeley, USA, where she is currently the Ted Van Duzer Endowed Associate Professor. She is a Fellow of OSA and the American Institute for Medical and Biological Engineering.

Waller has established herself as a visionary in the important new field of computational imaging through her pioneering work on phase retrieval from intensity measurements. She has also made advancements in Fourier ptychography, 3D imaging in scattering media and imaging using a diffuser.

In the past four years, Waller has generated approximately US\$6 million in research funding and published 27 journal papers and 6 patent applications. Her research has been recognized through over 100 invited talks, and she has contributed to the research community through work on many conference committees and as associate editor of *IEEE Transactions on Computational Imaging*.

## C.E.K. Mees Medal

*In recognition of an original use of optics across multiple fields*



### Halina Rubinsztein-Dunlop

University of Queensland, Australia  
*For pioneering innovations in the transfer of optical angular momentum to particles, using sculpted light for laser manipulation on atomic, nano- and microscales to generate fundamental insight and provide powerful probes to biomedicine*

Halina Rubinsztein-Dunlop, the first woman to win the Mees medal, received her Ph.D. from the University of Gothenburg, Sweden. She is currently head of the School of Physical Sciences and head of the School of Mathematics and Physics at the University of Queensland. She is a Fellow of OSA, the Australian Academy of Science and SPIE.

Rubinsztein-Dunlop is a pioneer in her field. She was the first woman professor of physics in Australia. Her work on the mechanical action of light, subsequently applied to biological and micron-scale systems, produced seminal results during the field's birth in the 1990s.

Rubinsztein-Dunlop's group in laser micromanipulation/optical tweezers was the first to demonstrate the transfer of angular momentum of light to microscopic particles. In addition, she was the first to demonstrate an optical system that can apply and accurately measure the torque exerted by a trapping beam on a rotating birefringent probe particle. Rubinsztein-Dunlop also has a distinguished record of achievement in the atomic domain of laser cooling and trapping of atoms.

## William F. Meggers Award

*In recognition of outstanding work in spectroscopy*



### Keith Nelson

Massachusetts Institute of Technology (MIT), USA

*For expanding the horizons of impulsive stimulated Raman scattering (ISRS) to the generation of intense tunable terahertz pulses, thus establishing new transient-grating techniques for a more effective application of time-domain*

*coherent nonlinear spectroscopy in the study of condensed-phase molecular dynamics*

Keith Nelson received his Ph.D. from Stanford University, USA. After postdoctoral study at the University of California Los Angeles, USA, he joined MIT, where he is the Haslam and Dewey Professor of Chemistry. He is a Fellow of OSA, the American Association for the Advancement of Science, the American Physical Society and the Japan Society for Promotion of Science. He received OSA's Ellis R. Lippincott Award in 2012.

Nelson is a world-recognized pioneer in the development and application of ultrafast spectroscopy to the study of solids and liquids. Over several decades he has made advances in the study of condensed-phase dynamics by developing new optical technologies. His accomplishments include the development of femtosecond impulsive Raman spectroscopy, pulse-shaping technology, terahertz pulse generation for coherent control spectroscopy, and multidimensional optical spectroscopy of molecular solids.

Nelson was also the first to commercialize femtosecond nonlinear spectroscopy. His transient grating technology was the foundation of a startup company, subsequently acquired by Phillips, which measured thin-film thicknesses in semiconductor fabrication lines with angstrom resolution.

## David Richardson Medal

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



### Majid Ebrahim-Zadeh

ICFO–The Institute of Photonic Sciences and ICREA–Catalan Institution for Research and Advanced Studies, Barcelona, Spain

*For contributions to the advancement of nonlinear optical technology and commercial development of cutting-edge optical parametric oscillators*

Majid Ebrahim-Zadeh received his Ph.D. from the University of St. Andrews, UK. He was a Royal Society of London University Research Fellow and a reader at St. Andrews. He is currently the ICREA Professor and Group Leader at ICFO. He is a Fellow of OSA and SPIE.

Ebrahim-Zadeh has long been at the forefront of research in optical parametric oscillators (OPOs) and nonlinear frequency conversion technology. He has made pioneering scientific and technological contributions to the field that have transformed OPOs from proof-of-principle conceptual devices to viable coherent sources in difficult spectral regions inaccessible to lasers. He is an international leader in commercial and industrial advancement of OPO technology, founding the company Radiantis in 2005 and serving as president and chief scientist. Today, the company is recognized as a leading manufacturer of advanced OPO systems and frequency conversion technology worldwide.

## Kevin P. Thompson Optical Design Innovator Award

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



### Rengmao Wu

Zhejiang University, China

*For achievements in theory and computational methods for freeform illumination optics*

Rengmao Wu received his Ph.D. from Zhejiang University, China. He did postdoctoral research at the Universidad Politécnica de Madrid, Spain, and the University of Arizona College of Optical Sciences, USA. He is currently a professor in the College of Optical Sciences and Engineering at Zhejiang University. He is a senior member of OSA.

Wu has made significant contributions to freeform optics. In early 2013, when still a Ph.D. student, he invented the Monge–Ampère (MA) equation method, allowing the design of smooth freeform surfaces based on ideal-source assumption. He has also made contributions to the design for freeform imaging optics, developing an algorithm for designing freeform imaging optics with B-spline surfaces and exploring its applications in augmented reality.

Wu has published over 40 peer-reviewed articles and is active in the optics community, serving on a number of conference and program committees.

## Edgar D. Tillyer Award

*In recognition of distinguished work in the field of vision*



### David H. Brainard

University of Pennsylvania,  
USA

*For groundbreaking experimental and theoretical contributions to our understanding of how the visual system resolves the ambiguities inherent in sensory signals to produce a stable percept of object color*

David Brainard received his Ph.D. from Stanford University, USA. He held positions at the University of Rochester, USA, and the University of California at Santa Barbara, USA, before joining the University of Pennsylvania as RRL Professor of Psychology. He is also director of the university's Vision Research Center and associate dean for the natural sciences in Penn's School of Arts and Sciences. He is a Fellow of OSA and the Association for Psychological Science.

Brainard's most well-known contributions are from his studies of color constancy, which have led to a quantitative model. Notable achievements in his work include his development and distribution of the Psychophysics Toolbox (a software package for visual psychophysics), psychophysical measurements, his ability to link psychophysical data to quantitative models, and his ability to translate insights from biological vision into practical image-processing solutions. Recently, he has applied the underlying principles of color constancy to how the visual system resolves ambiguity in the visual pathway, and has developed a computational model.

## Charles Hard Townes Medal

*In recognition of contributions to quantum electronics*



### Mikhail Lukin

Harvard University, USA

*For pioneering theoretical and experimental contributions to quantum nonlinear optics and quantum information science and technology, and for the development and application of nanoscale quantum systems for sensing*

Mikhail Lukin received his Ph.D. from Texas A&M University, USA. Following postdoctoral work, he became an assistant professor of physics at Harvard University. Today, he is the George Vasmer Leverett Professor of Physics at Harvard, co-director of the Harvard Quantum Initiative in Science and Engineering and co-director of the Harvard-MIT Center for Ultracold Atoms. He is a Fellow of OSA and the American Physical Society and a member of the U.S. National Academy of Sciences. He received OSA's Adolph Lomb Award in 2000.

Lukin is best known for his work in the area of quantum optical science and its applications. His early work in atomic physics on electromagnetically induced transparency led to several seminal results detailing the interaction of atomic ensembles with light. In the past decade, Lukin and his group have developed and demonstrated optical systems that are nonlinear at a single-photon level, achieving a four-decade-long goal in the field of nonlinear optics.

Lukin's current research includes quantum manipulation of atomic and nanoscale solid-state systems, quantum many-body physics and applications to quantum metrology and quantum information processing, including realization of quantum computers and quantum networks.

## John Tyndall Award

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



### Michal Lipson

Columbia University, USA

*For fundamental and technological advances in integrated photonic devices*

Michal Lipson, the first woman to receive the Tyndall Award, received her Ph.D. in physics from The Technion–Israel Institute of Technology, Israel. Following a postdoctoral position at Massachusetts Institute of Technology, USA, she joined the School of Electrical and Computer Engineering at Cornell University, USA. She

is currently Eugene Higgins Professor of Electrical Engineering and Professor of Applied Physics at Columbia University. She is a Fellow of OSA and IEEE and a member of the U.S. National Academy of Sciences. She received OSA's R.W. Wood Prize in 2017. She is the OSA 2021 Vice President and will serve as the Society President in 2023.

Lipson pioneered critical building blocks in the field of silicon photonics, which is recognized as one of the most promising directions for solving the major bottlenecks in microelectronics. She showed the ability to tailor the electro-optic properties of silicon, which led to the explosion of silicon photonics research and development.

More than one thousand papers published yearly involve devices and circuits based on Lipson's original modulators or on other silicon photonics devices demonstrated by her group, including slot waveguides and inverse tapers. She has over 45 patents and has delivered hundreds of invited, keynote and plenary lectures.

## 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)*



### Wolfgang Peter Schleich

Universität Ulm, Germany  
*For pioneering contributions to topics including gyroscopes and general relativity, Schleich-Wheeler oscillations, quantum state engineering, quantum optics in phase space, Gauss-sum factorization and wave packet dynamics and the red*

*shift controversy resolution in atom interferometry*

Wolfgang Peter Schleich received his Ph.D. in physics and habilitation from the Ludwig-Maximilians-Universität München, Germany, and was a postdoctoral research associate at the Center for Theoretical Physics in Austin, Texas, USA. Before joining the Universität Ulm, he worked with Herbert Walther at the Max-Planck-Institut für Quantenoptik. Schleich is currently chair-professor of theoretical physics, Universität Ulm, and acting director of the German Aerospace Center (DLR), Institute of Quantum Technologies. He is a Fellow of OSA, the American Physical Society, the European Optical Society and the Institute of Physics; an elected member of the Austrian Academy of Sciences and Academia Europaea; and an honorary member of the Hungarian Academy of Sciences.

Schleich is a theoretical physicist with a 40-year career of demonstrated leadership and groundbreaking research. He

is best known for providing the theoretical support for the Bose-Einstein-condensate-on-a-chip sounding-rocket experiments. He is active in the community, serving as a reviewer for numerous scientific journals and funding agencies, as a member and participant in his professional societies, and as an editor and speaker. He is organizer or co-organizer of 35 international conferences on quantum optics.

## R.W. Wood Prize

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



### Tobias Kippenberg

Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland  
*For pioneering contributions to the realization of chip-scale optical frequency combs*

Tobias Kippenberg received his Ph.D. from the California Institute of Technology, USA, and habilitation

from the Ludwig-Maximilians-Universität München, Germany. He is currently a full professor of physics and electrical engineering at EPFL. He is a Fellow of OSA and the American Physical Society.

In 2007, Kippenberg and his team discovered the ability of optical microresonators to generate optical frequency combs via parametric interactions. This discovery showed that as an alternative to the use of mode-locked lasers, a CW laser can be converted into a broadband frequency comb via nonlinear wave mixing, overcoming passive cavity dispersion. Kippenberg has led the field in novel microfabrication techniques, both in crystalline microresonators and through his introduction and perfection of the photonic Damascene process in the silicon nitride platform.

## Call for 2022 Award and Medal Nominations

Celebrate the field's technical, research, engineering, education, business, leadership and service accomplishments. Nominations for most 2022 awards and medals are due **1 October 2021**. Visit [www.osa.org/AwardCategories](http://www.osa.org/AwardCategories) to take advantage of this opportunity to recognize the extraordinary achievements of your colleagues.

## Thank You, Award Selection Committee Members!

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