

# 2014 OSA Awards

OSA proudly announces the winners of its 2014 awards and medals. These distinguished individuals were chosen for their demonstrated dedication, ingenuity and perseverance in attaining the highest level of achievement in their chosen fields. The OSA Board of Directors approved the award recipients at its meeting in February. Most of these awards will be presented at Frontiers in Optics, the 98<sup>th</sup> OSA annual meeting, in Tucson, Ariz., U.S.A., in October 2014.

## Frederic Ives Medal/ Jarus W. Quinn Prize

*The highest award of the Society, the Ives Medal recognizes overall distinction in optics*



**Paul B. Corkum**, University of Ottawa and National Research Council, Canada

*For outstanding contributions to the foundation of the fields of attosecond science, high-harmonic spectroscopy and molecular optics*

A Canadian originally from Saint John, New Brunswick, Paul Corkum is a fellow of the Royal Society of London and a foreign member of both the U.S. and Austrian Academies of Sciences. An OSA Fellow, he has been awarded the King Faisal Prize for Science, the Harvey Prize for Science, the OSA Charles H. Townes Award, the IEEE Quantum Electronics Award, the Arthur L. Schawlow Prize of the American Physical Society (APS), and the Zewail Prize of the American Chemical Society.

Corkum received his Ph.D. from Lehigh University in 1972 and joined the Canadian National

Research Council in 1973. He introduced many concepts for how atoms and molecules interact with intense light pulses. From this work, he showed how atomic or molecular gases can be used to produce and measure attosecond pulses, as well as how a molecule can "photograph" itself. He currently directs the Joint Attosecond Science Laboratory in Ottawa and holds a Canada Research Chair in Attosecond Photonics at the University of Ottawa.

## Esther Hoffman Beller Medal

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



**Shin-Tson Wu**, University of Central Florida, U.S.A.

*For his broad and significant impact to academia and industry in photonics education through mentoring, textbooks, publications, seminars and onsite training courses*

Shin-Tson Wu is a Pegasus Professor at the College of Optics and Photonics (CREOL), University of Central Florida. He is a recipient of the Slottow-Owaki Prize of the Society for Information Display (SID), the OSA Joseph Fraunhofer Award, the

SPIE G.G. Stokes Award, and the SID Jan Rajchman Prize. In 2013, he was inducted into the National Academy of Inventors. At present, he serves as chair of the OSA Publications Council as well as on the OSA Board of Directors, the SID Honors and Awards Committee, and SPIE Awards Committee.

Wu received his Ph.D. in physics from the University of Southern California and B.S. in physics from National Taiwan University. Before joining UCF in 2001, he was with Hughes Research Laboratories in Malibu, Calif., U.S.A., for 18 years. His research at UCF focuses in next-generation LCDs, adaptive liquid and liquid crystal lenses, advanced spatial light modulators for optical communications, new photonic materials and devices and liquid-crystal-based biosensors.

## Max Born Award

*In recognition of contributions to physical optics*



**Costas M. Soukoulis**, Iowa State University, U.S.A.

*For his creative and outstanding theoretical and experimental research in the fields of photonic crystals and left-handed metamaterials and for novel applications of these materials*

*to manipulate electromagnetic radiation*

Costas Soukoulis is a senior scientist in the Ames Laboratory and a Distinguished Professor of Physics at Iowa State University. He received his B.Sc. from the University of Athens in 1974 and obtained his Ph.D. in physics from the University of Chicago in 1978. He was a member of the physics department at the University of Virginia from 1978 to 1981, spent three years at Exxon Research and Engineering Co. from 1981 to 1984, and since then has been at Iowa State and Ames Laboratory. He has been an associated member of FORTH at Heraklion, Crete, since 1984.

Soukoulis has achieved international recognition for his work on theoretical understanding and experimental realization of photonic crystals (diamond lattice and the woodpile structure). He has been instrumental in bringing forward the revolutionary fields of photonic crystals and metamaterials, extending the realm of electromagnetism and opening exciting new applications. In particular, Soukoulis and his colleagues were the first to demonstrate magnetic response and negative index of refraction at optical frequencies, which do not exist in natural materials. Another accomplishment for Soukoulis is the development of a theoretical model—the so-called random lasers—for the study of lasing in disordered systems.





## Stephen D. Fantone Distinguished Service Award

In recognition of service to the optical community



### Anthony J. Campillo, U.S.A.

For sustained leadership, vision and outstanding dedication to the quality and impact of OSA publications

Anthony J. Campillo has been active in the field of optics and photonics for more than 40 years and has published approximately 100 peer-reviewed journal articles, many of them in OSA journals. A member since 1966, Campillo has been a consistent voice at OSA, volunteering many hours of service in various activities that significantly strengthened the Society. He was a topical editor (1993-1998), associate editor (1999-2001) and editor-in-chief (2002-2007) for *Optics Letters*; he has also served on the Board of Editors since 2002 and has accepted a variety of duties in committees tied to long-term planning, time to publication, editorial ethics and other activities to strengthen new and existing publications. He is a fellow of OSA and APS, and currently serves as an OSA senior science advisor.

Campillo received his Ph.D. in electrical engineering from Cornell University in 1973. His research includes laser development at GTE Laboratories (1966-68), ultrafast spectroscopy and nonlinear optics at

Los Alamos Scientific Laboratory (1972-1979), environmental chemistry and aerosol optics at Brookhaven National Laboratory (1979-81) and laser chemical/biological analysis, microcavity effects, photonics and nanotechnology at the U.S. Naval Research Laboratory (1981-2007).

## Michael S. Feld Biophotonics Award

In recognition of individuals for their innovative and influential contributions to the field of biophotonics, regardless of their career stage



### Rebecca Richards-Kortum, Rice University, U.S.A.

For exceptional contributions to advancing the applications of optics in disease diagnosis and inspiring work in disseminating low-cost health technologies to the developing world

Rebecca Richards-Kortum is the Stanley C. Moore Professor of Bioengineering at Rice University. For two decades, she has focused on translating research that integrates advances in nanotechnology and molecular imaging with microfabrication technologies to develop optical imaging systems that are inexpensive, portable and provide point-of-care diagnosis. This basic and translational research is highly collaborative and has led to new technologies to improve the early detection of cancers and other diseases, especially in impoverished settings.

Richards-Kortum's research group is developing miniature

imaging systems to enable better screening for oral, esophageal and cervical cancer and their precursors at the point of care, as well as contrast agents for *in vivo* molecular imaging of changes associated with pre-cancer and early cancer. More recently, the group has worked to integrate advances in nanotechnology and microfabrication to develop novel, low-cost sensors to detect infectious diseases at the point of care.

## Joseph Fraunhofer Award/Robert M. Burley Prize

In recognition of significant accomplishments in optical engineering



### Juan Carlos Miñano, Universidad Politécnica de Madrid, Spain

For the discovery of exceptional new design methods and devices in both nonimaging and imaging optics over more than three decades, with special emphasis in freeform-surface design

Since 1982 Professor Miñano has been involved in optics research, primarily applied to optoelectronics (solid state lighting and photovoltaics). He has written several books, has published more than 50 journal papers, has more than 50 patents and has given more than 100 conference presentations. Miñano has been a professor at the Universidad Politécnica de Madrid since 1997 and has collaborated with Light Prescriptions Innovators (LPI) as a senior scientist since 2000. In 2010 he was honored with the SPIE A.E. Conrady Award.

Miñano has developed several optical design techniques,

including the Poisson Bracket nonimaging concentrator design method and, in conjunction with Pablo Benítez, the well-known simultaneous multiple surfaces (SMS) design method in its 2-D and 3-D versions, which has been used to design advanced freeform optics. Miñano has invented numerous novel non-imaging optical architectures (exemplified by the well-known RXI), many of which have been incorporated into a suite of commercial products through his collaboration with LPI.

## Joseph W. Goodman Book Writing Award

In recognition of 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 (co-sponsored with SPIE)



### Wenshan Cai, Georgia Institute of Technology, U.S.A.



### Vladimir M. Shalaev, Purdue University, U.S.A.

Authors of Optical Metamaterials: Fundamentals and Applications (Springer, 2010)

Wenshan Cai received his B.S. and M.S. degrees in electronic engineering from Tsinghua



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University, Beijing, in 2000 and 2002, respectively, and his Ph.D. in electrical and computer engineering from Purdue University in 2008. Following a postdoctoral appointment at Stanford University, he joined the faculty of the Georgia Institute of Technology in January 2012 as an associate professor in electrical and computer engineering, with a joint appointment in materials science and engineering.

Cai's research is in the area of nanophotonic materials and devices, in which he has made a major impact on the evolving field of plasmonics and metamaterials. His recent interests lie in applying new ideas from these emerging fields to produce innovative applications for optical nanocircuits, subwavelength signal processing, nanoimaging, energy harvesting and biochemical sensing. He has published some 35 papers in peer-reviewed journals; total citations of his recent papers have reached approximately 4,000 within the past few years.

Vladimir M. Shalaev, scientific director for nanophotonics at Birck Nanotechnology Center and distinguished professor at Purdue University, obtained his Ph.D. from the Federal Siberian University, Russia. He has received several major awards, including OSA's Max Born Award for his pioneering contributions to the field of optical metamaterials, the Willis E. Lamb Award for Laser Science and Quantum Optics and the UNESCO Medal for the development of nanosciences and nanotechnologies.

Shalaev specializes in nanophotonics, plasmonics, and optical metamaterials. He has authored/co-authored three books, edited/co-edited five books and published twenty-six book chapters and more than 400 research publications, including about 250 research papers in refereed journals. He is a Fellow of IEEE, APS, SPIE and OSA.

## Nick Holonyak Jr. Award

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



**Ching Wan Tang**, University of Rochester, U.S.A.

*For his discovery of efficient thin-film organic light-emitting diodes (OLEDs), which has led to novel display and lighting products*

Ching Tang received his B.Sc. from the University of British Columbia in 1970 and his Ph.D. from Cornell University in 1975. He spent 31 years with the Kodak Research Laboratories, where he was involved in research in organic electronic materials and devices. In 2006 he joined the University of Rochester as the Doris Johns Cherry Professor of Chemical Engineering. Since 2013, he also has held an appointment at the Hong Kong University of Science and Technology as the Bank of East Asia Professor. Tang is a member of the U.S. National Academy of Engineering.

Tang's research experience centers on developing efficient organic electronic devices. He introduced the concept of donor-acceptor heterojunction structure, which led to the development of highly efficient organic solar cells and OLEDs. Tang has been recognized for the invention of the OLED, which

has since been commercialized in display and lighting applications, and for his many contributions to OLED display technology.

## Robert E. Hopkins Leadership Award

*In recognition of an individual or group of optics professionals who has made a significant impact on the field of optics and/or made a significant contribution to society*



**Robert P. Breault**,  
Breault Research Organization Inc., U.S.A.

*For pioneering leadership in the formation of global optics industry clusters*

Robert Breault received his B.S. from Yale and his Ph.D. in optics from the University of Arizona. He is chairman and founder of Breault Research Organization and chairman of the Arizona Optics Cluster. He has participated in regional, national and global economic development in 38 countries and has helped to create dozens of optics clusters. He serves on the U.S. Department of Commerce's Emerging Technology and Research Advisory Committee to advise the department on export regulations.

Breault is a pioneer in the field of computerized stray-light analysis. He founded Breault Research Organization, an optical-engineering software development and consulting company, in 1979. He participated in the stray-light analysis for the Hubble Telescope,

IRAS, DIRBE, IBSS, ISO, Galileo, Cassini, MERIS, CRISTI and XMM space missions and for many military optical sensors. Breault was instrumental in the fabrication of different devices to measure the bidirectional reflectance distribution function (BRDF) of surfaces.

## Edwin H. Land Medal

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



**Mathias Fink**, École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, France

*For seminal investigations of time reversal of ultrasonic waves with applications to imaging and therapy*

Mathias Fink pioneered the development of time-reversal mirrors both for ultrasonic and electromagnetic waves. He established the founding principles of time-reversal mirrors in complex media and applied these approaches in medicine (lithotripter, ultrasound brain therapy, ultrafast ultrasound imaging, shear wave imaging), telecommunications, geo-physics, defense and human interfaces. Four start-up companies have been created from his research (Echosens, Sensitive Object, Supersonic Imagine and Time-Reversal Communications). Several of his instruments are currently used in clinical practice.

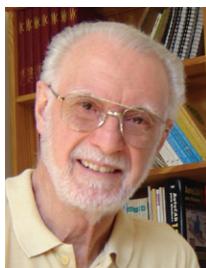
After receiving a Ph.D. in solid state physics from the Université d'Orsay, Fink moved to medical imaging and wave



physics. He is currently a professor of physics at ESPCI ParisTech, where in 1990 he founded the Laboratoire Ondes et Acoustique, which in 2009 became the Institut Langevin. He was elected to the French Academy of Engineering in 2002, the French Academy of Science in 2003 and as the chair of Technological Innovation of the Collège de France in 2008.

### Sang Soo Lee Award

*In recognition of outstanding leadership in founding or growing the optics and photonics community locally*



**Mario Garavaglia,**  
Centro de Investigaciones  
Ópticas, Argentina

*For his key role in the development of optics and photonics research and education in Argentina*

Mario Garavaglia earned his undergraduate degree at the Universidad Nacional de La Plata (UNLP), Argentina, in 1960 and his Ph.D. at Uppsala University, Sweden, in 1965. In 1966 he was appointed assistant professor in the physics department of UNLP and entered the Career Investigator of the National Scientific and Technical Research (CONICET) of Argentina, eventually reaching the rank of senior researcher and board member. He has published more than 250 papers in international journals, on research covering diverse topics in spectroscopy, laser physics, biomedical optics, applications in archaeology, optical fractals, and other areas.

In 1977 Garavaglia founded the Center for Optical Re-

search (CIOp), where he served as director from 1977 to 1992. CIOp is one of the largest optics education and research institutions in Latin America and is the region's only laboratory with an industrial-laser installation. Garavaglia has taught a generation of Argentine and Latin American physicists in laser and photonics research, having directed 22 Ph.D. theses. In 1999 he was awarded the Galileo Galilei Award by the International Commission for Optics for his work on lasers and their applications in industry, medicine and biology and his promotion of optics in Latin America.

### Emmett Leith Medal

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



**Adam Kozma**, independent engineering consultant, U.S.A.

*For seminal contributions to optical information processing of radar data and holographic memories*

Adam Kozma, who died 31 January 2014, enjoyed a long and distinguished career as a research engineer, specializing in radar and optical imaging. His employers included University of Michigan's Willow Run Laboratories; the Environmental Research Institute of Michigan, where he served as vice president for radar and corporate development; the Syracuse Research Corporation, where he was vice president; and the MITRE Corporation of Boston, from which he retired in 1993. After retirement he continued to consult for the Army, Air Force and industry, and also

was an adjunct professor at the University of Michigan.

Kozma earned B.S.E. and M.S.E. degrees from the University of Michigan, an M.S. from Wayne State University, and a Ph.D. from the University of London. He authored more than 25 peer-reviewed papers and more than 50 technical reports, and presented many papers at technical society meetings both in the U.S. and abroad. He was the recipient of numerous awards, including the Ordnance Medal from the American Defense Preparedness Association, and was named an IEEE Research Fellow and OSA Fellow.

### Ellis R. Lippincott Award

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



**Andrei Tokmakoff**, University of Chicago, U.S.A.

*For innovations in two-dimensional infrared spectroscopy and its application to molecular structure and dynamics, especially in complex aqueous and biomolecular systems*

Andrei Tokmakoff joined the University of Chicago in 2013 as Henry G. Dale Distinguished Service Professor, with appointments in the department of chemistry, the James Franck Institute, and the Institute of Biophysical Dynamics. Prior to this, he was a professor of chemistry at the Massachusetts Institute of Technology (MIT) starting in 1998. His awards include the Alfred P. Sloan

Research Fellowship, the Coblenz Award, the National Frese-nius Award and the Ernest K. Plyler Prize for Molecular Spectroscopy.

The central theme of Tokmakoff's research is molecular dynamics, the time-dependent changes to molecular structures in chemical and biological processes. His research group has developed 2-D infrared spectroscopy, which uses sequences of ultrashort pulses of infrared light to capture the motions of molecules. By plucking different bond vibrations of a molecule and understanding how they interact with one another, the team can deduce transient structural information and can construct molecular movies of the process.

### Adolph Lomb Medal

*In recognition of noteworthy contributions made to optics before reaching the age of 35*



**Alexander Szameit**,  
Friedrich-Schiller-Universität  
Jena, Germany

*For groundbreaking contributions to linear and nonlinear light evolution in photonic lattices, and photonic simulations of quantum, solid state and relativistic phenomena.*

Alexander Szameit received his physics diploma in 2004 and his Ph.D. in 2007, both of them from the Friedrich-Schiller-Universität. He was a visiting intern astronomer at the Institute for Astronomy in Hilo,



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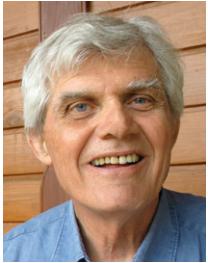


Hawaii, U.S.A., in 2002 and a visiting fellow at the Nonlinear Physics Centre at the Australian National University in 2007. He spent from 2009 to 2011 as a postdoc at the Technion in Haifa, Israel, in Moti Segev's group and returned to Friedrich-Schiller-Universität in 2011 as an assistant professor.

Szameit's research includes work in linear and nonlinear waves in periodic media, micro- and nano-photonics, the integration of complex optical circuits, chip-based photonic quantum computing, and other aspects of modern optics. He has published more than 110 peer-reviewed papers in internationally recognized scientific journals and has given more than 70 invited presentations.

## William F. Meggers Award

*In recognition of outstanding work in spectroscopy*



## François Biraben, Laboratoire Kastler Brossel, France

*For outstanding achievements in high-resolution atomic spectroscopy and metrology of fundamental constants, leading to far-reaching tests of quantum electrodynamics*

François Biraben joined the Ecole Normale Supérieure in 1969 and in 1973 was appointed Chargé de Recherche at Centre National de la Recherche Scientifique (CNRS), where he has served as Directeur de Recherche since 1985. From 1998 to 2013

he was deputy director of the Laboratoire Kastler Brossel.

Biraben received his Ph.D. in physics, on the topic of Doppler free two-photon spectroscopy, from the Université Pierre et Marie Curie, Paris, in 1977. In 1983 he began to study the two-photon transition between the 2S metastable level of hydrogen and the upper Rydberg levels, with the goal of improving the determination of the Rydberg constant. He started a new experiment in 1998 to measure the ratio between the Planck constant and the mass of a rubidium atom to determine the fine-structure constant. Also since 1998, he has participated in an experiment to measure the Lamb shift of muonic hydrogen to deduce the radius of the proton's charge distribution.

## David Richardson Medal

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



## Jannick P. Rolland, University of Rochester, U.S.A.

*For visionary contributions and leadership in optical design and engineering, enabling noninvasive, optical biopsy*

Jannick Rolland is the Brian J. Thompson Professor of Optical Engineering at the Institute of Optics at the University of Rochester and a Fellow of OSA and SPIE. She directs the NSF-/UCRC Center for Freeform Optics (CeFO), the R.E. Hopkins Center and the ODALab. She graduated from the optical engineering school of the Institut d'Optique Théorique et

Appliquée, France, and earned a Ph.D. from the College of Optical Sciences at the University of Arizona.

Rolland's research interest lies in innovation for optical instrumentation across a broad range of applications, with key foci in sensing and metrology, medical and biomedical imaging and 3-D visualization, including augmented reality, poised to be transformed with the emerging technology of freeform optics. Her drive in conceiving and engineering novel technologies is to gain knowledge about the world we live in and to enable the science and medicine of the future.

## Edgar D. Tillyer Award

*In recognition of distinguished work in the field of vision, including (but not limited to) the optics, physiology, anatomy or psychology of the visual system*



## Suzanne P. McKee, Smith-Kettlewell Eye Research Institute, U.S.A.

*For contributions to fundamental understanding of visual motion and of normal and abnormal human stereo vision, revealing the limits and character of brain mechanisms responsible for the perception of depth*

Suzanne McKee received her undergraduate degree from Vassar College and her doctorate in experimental psychology from U.C. Berkeley. Her mentor at Berkeley was Professor Gerald Westheimer, a previous recipient of the Tillyer Award. A senior scientist at Smith-Kettlewell Eye Research Institute for 33 years, she has served as vice president of the Association for Research in Vision and

Ophthalmology and is an OSA Fellow.

McKee has worked in many areas of human visual psychophysics—color, motion processing, hyperacuity, contrast, eye-hand control, perceptual learning—but her particular specialty is stereopsis. Recently, in collaboration with B.R. Cottereau and A.M. Norcia, she used high-density EEG to measure neural population responses to disparity. In another collaboration with J.A. Movshon, D.M. Levi and C. Schor, she measured, in a large patient sample, the visual and oculomotor abnormalities associated with amblyopia and analyzed how the loss of binocular vision affects other visual functions.

## Charles H. Townes Award

*In recognition of outstanding contributions to quantum electronics*



## Masataka Nakazawa, Tohoku University, Japan

*For seminal contributions to the science and applications of ultrafast optics and ultrastable narrow-linewidth lasers*

Masataka Nakazawa joined NTT Laboratories in 1980, after receiving his Ph.D. from the Tokyo Institute of Technology, and was a visiting scientist at MIT in 1984. In 2001, he was appointed professor at Tohoku University, where he became the director of the Research Institute of Electrical Communication. He has also been the president of the Electronics Society of the Institute of Electronics, Information and Communication Engineers (IEICE) and an

OSA board member, and he is currently a board member of the IEEE Photonics Society. He is a Fellow of OSA, IEEE, IEICE and JSAP.

Nakazawa has engaged in research on optical solitons, ultrahigh-speed optical transmission, and ultrashort-pulse lasers, which resulted from his invention of the compact erbium-doped fiber amplifier (EDFA). His work on a regeneratively and harmonically mode-locked fiber laser in the 10-40 GHz region played an important role in high-speed transmission. His recent research has focused on digital coherent transmission using a frequency-stabilized erbium fiber laser. He achieved 1024 QAM multilevel coherent transmission, which resulted in a spectral efficiency of 14 bit/s/Hz. He has published 440 papers and given 260 international conference presentations.

### John Tyndall Award

*In recognition of contributions to fiber optic technology (co-sponsored with IEEE Photonics Society)*



**Kazuro Kikuchi,**  
University of Tokyo, Japan

*For contributions to semiconductor lasers and photonic materials, processing and device designs, including high reliability strained-layer lasers*

Kazuro Kikuchi received a B.S. in electrical engineering and an M.S. and Ph.D. in electronic engineering from the University of Tokyo, where he joined the department of electronic engineering in 1979. He is currently a professor at the university in the department of electrical engineering and informa-

tion systems. Kikuchi has also worked at the Research Center for Advanced Science and Technology, the Department of Frontier Informatics, and Bell Communications Research, and serves on the board of directors for Alnair Labs Corporation.

Throughout his career, Kikuchi's research has focused on optical fiber communications including optical devices and systems. He is currently involved in coherent optical communication systems that realize multi-level modulation formats with digital signal processing. He has published more than 200 peer-reviewed journal articles, 250 conference papers, several book chapters and three books. He is a Fellow of the IEEE Photonics Society, a member of OSA and a Fellow of IEICE. He has received numerous awards including the IEICE Achievement Award, Ichimura Award, Japan IBM Science Prize, Sakurai Memorial Award, Hattori Hokosho Prize, Ericsson Telecommunications Award, Shida Rinzaburo Prize, Japan's Prime Minister Award for the promotion of academy-industry collaboration, and the NEC C&C Prize.

### Herbert Walther Award

*In recognition of distinguished contributions in quantum optics and atomic physics as well as leadership in the international scientific community (co-sponsored by OSA and Deutsche Physikalische Gesellschaft)*



**Massimo Inguscio**, LENS,  
Università degli Studi di  
Firenze, Italy  
*For groundbreaking experi-  
ments in modern atomic,*



*molecular and optical (AMO) physics, from spectros-  
copy of metastable  
helium to Anderson localization  
of ultra-cold atoms, and for his  
scientific leadership worldwide*

Massimo Inguscio has a long record of experimental research in AMO physics and numerous related areas. Among his important achievements are experimental tests of the quantum electrodynamics theory of helium fine structure and the symmetrization postulate for spin-0 particles, invention of the sympathetic cooling technique with different atomic species, the first Bose-Einstein condensation of potassium atoms, the study of bosonic and fermionic gases in optical lattices, the first investigation of disorder physics with ultracold gases and demonstration of Anderson localization of matter waves, and development of spectroscopic instrumentation for ground-based and space astrophysics.

Inguscio received his Ph.D. in physics from the Scuola Normale Superiore di Pisa, Italy, in 1976, and went on to teach the subject in Italy. Since 1995 he has served as professor of atomic physics and structure of matter at the Università degli Studi di Firenze; he has also held numerous fellowships and visiting professorships in France, Germany and the United States during his career. Inguscio has authored 260 publications on international journals and books and has edited more than 10 books. He is a Fellow of the European Optical Society, APS and OSA and is a member of the Accademia Nazionale dei Lincei, Roma, and the Instituto Lombardo (Accademia de Scienze e Lettere), Milano.

### R. W. Wood Prize

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



**Michael Bass**, University of  
Central Florida, U.S.A.

*For the discovery of optical rectification, which led to the development of very wide band terahertz wave sources*

Michael Bass received his B.S. from Carnegie Mellon University and his physics Ph.D. from the University of Michigan. He worked at the Raytheon Research Division and served on the faculty at the University of Southern California. In 1987 he joined what would become CREOL, The College of Optics and Photonics at the University of Central Florida. He is professor emeritus of optics, a Fellow of OSA, a Life Fellow of IEEE and Fellow of the National Academy of Inventors.

Following his discovery of optical rectification, Bass concentrated on solid state lasers and using lasers to probe materials. His work uncovered new solid state lasers, models for thermal lensing and birefringence in crystalline lasers and an understanding of the temperature dependence of solid state lasers. He used laser calorimetry to obtain absolute measurements of two-photon absorption coefficients. In addition, he was the first to demonstrate lasing in gain-guided, index-antiguide fibers.