optical imaging

## frequency metrology

quantum optics

light scattering in complex media

ultrafast op

laser the rapeutics

## excellence in leadership

service to the optics community

# Meet OSA's 2015 Felows

SA is pleased to announce the new Fellow Members for 2015. From among 151 candidates, 76 OSA members were elected for their significant contributions to the advancement of optics and photonics, as confirmed by the Board of Directors at its meeting in October 2014.

The society appreciates the efforts of the many nominators and of the members of the Fellow Members Committee who reviewed all of the nominations. Chaired by Timothy J. Carrig, the committee included Juan Campos, Katherine Hall, Hiromasa Ito, Fredrik Laurell, Lenore McMackin, Alan C. Nilsson, Sergei K. Turitsyn, Peter J. Winzer, Xiaocong Larry Yuan, Halina Rubinsztein-Dunlop and A. Catrina Coleman.

Nominations for OSA's 2016 class of Fellows are due by 15 June 2015. For more information, contact the OSA Awards Office (awards@osa.org; +1 202.416.1960) or visit www.osa.org/awards.



**Peter E. Andersen** Danmarks Tekniske Universitet, Denmark For contributions in light-tissue

interactions specific to optical coherence tomography, including new laser diagnostic technology for biophotonic imaging.

## laser diagnostic technology

# optical coherence theory

tical pulses

## global optics industry clusters

## passive waveguide-based devices

nanophotonics

## few-optical-cycle laser sources

## optical fiber design

## research leadership

Fellow illustrations by Gluekit/Map: Thinkstock



**Gisele Bennett** Georgia Tech Research Institute, USA For technical innovation in the use of optical imaging and for research leadership.



Adela Ben-Yakar

University of Texas at Austin, USA For original and innovative contributions in biomedical optics and laser therapeutics, especially in ultrafast laser microsurgery, deep-tissueimaging endomicroscopy, plasmonic surgery and imaging with translational applications of these methods in biology, medicine and surgery.



Alexandra Boltasseva Purdue University, USA For seminal contributions to nanophotonics and new plasmonic materials.



Alberto Bramati

Université Pierre et Marie Curie, France For outstanding contributions to the field of quantum optics and quantum fluid properties of exciton-polaritons in microcavity semiconductors, with the demonstration of squeezing, superfluid flow, solitons and quantized vortices.



#### P. Scott Carney

University of Illinois at Urbana-Champaign, USA For fundamental advances in optical coherence theory and the application of statistical optics and inverse problems in near-field microscopy, coherence tomography and spectroscopy.



#### Paolo De Natale

Istituto Nazionale di Ottica-CNR, Italy For pioneering contributions to the study and development of laserbased devices and techniques for frequency metrology, particularly for atomic and molecular measurements across the infrared and THz spectral regions.



Robert P. Breault Breault Research Organization Inc., USA For pioneering leadership in the formation of global optics industry clusters.



Giulio Cerullo

Politecnico di Milano, Italy For pioneering work on fewoptical-cycle laser sources, for seminal achievements in ultrafast spectroscopy of organics, and for service to the optics community.



Liang Dong Clemson University, USA For pioneering contributions to specialty optical fiber design, materials and fabrication.



Rémi Carminati

Institut Langevin, ESPCI Paris Tech, France For pioneering work on the theory of near-field optics and near-field thermal radiation, and for his many contributions to the field of light scattering in complex media.



Gabriella Cincotti Università degli Studi Roma Tre, Italy For the design and application of passive waveguide-based optical devices for advanced optical fiber communications.



**Christophe Dorrer** *University of Rochester, USA* For the invention of methods and devices for the control and characterization of ultrafast optical pulses, with significant impact across a wide range of applications, from telecommunications to high-energy lasers.



Frank J. Effenberger Huawei Technologies, USA For outstanding and sustained contributions to the research and development of broadband optical access networks, particularly passive optical networks, and the standardization of optical access technologies.



#### **Carlos Ferreira**

Universitat de Valencia, Spain For significant scientific contributions and achievements in the fields of optical pattern recognition, application of anamorphic systems in optical processing and resolution in optical systems.



Sarath D. Gunapala NASA Jet Propulsion Laboratory, USA For contributions to the development of quantum-structure-based infrared detectors and focal plane arrays.



#### Jason Matthew Eichenholz Open Photonics, USA

For achievements and leadership across a broad spectrum of projects in supporting open innovation, entrepreneurship, commercialization, technology and strategic developments for multiple corporations, and for excellence in leadership at OSA.



#### Mette Gaarde

Louisiana State University, USA For outstanding experimentally relevant research focused on the production and application of ultrafast extreme ultraviolet radiation sources that exploits highperformance computing for the solutions of the time-dependent Schrödinger equation and Maxwell's wave equation.



#### **Richard Hammond**

University of Carolina at Chapel Hill, USA For outstanding technical leadership in establishing major research programs in optical metamaterials, light filamentation, and attosecond science and for pioneering scientific contributions to the fields of radiation reaction, quantum and nonlinear optics.



Dean R. Evans U.S. Air Force Research Laboratory, USA For original contributions in the areas of engineered photorefractive materials and harvested stressed ferroelectric nanoparticles.



#### Jean-Jacques Greffet

Institut d'Optique, France For theoretical and experimental work on the role of surface waves in radiative heat transfer at nanoscale and emission of radiation, including achievements of large spatial coherence in thermal radiation leading to a new class of radiation emitters.



Aaron R. Hawkins Brigham Young University, USA For developments in optical communications photodiodes and receivers, specifically wafer-fused photodiodes, and for contributions in the field of optofluidics, especially hollow-core waveguide-based analysis platforms.



L. Michael Hayden University of Maryland Baltimore County, USA For pioneering contributions to the development of electro-optic devices for the generation of terahertz waves.



John Charles Howell University of Rochester, USA For innovative leadership in experimental research for quantifying information content of multidimensional classical and quantum states.



Clemens F. Kaminski University of Cambridge, United Kingdom For pioneering work in the

development of optical methods for quantifying the kinetics of reactions in chemical and biological systems.



#### Inuk Kang

LGS Innovations, LLC, USA For ultrafast measurements of optical processes, properties and pulses, and demonstrations of integrated optical devices for optical communication systems with advanced modulation formats.



#### Hiroo Kinoshita

University of Hyogo, Japan For pioneering contributions to the development of extreme-ultraviolet (EUV) lithography, from the very first publication, the first EUV demonstration experiments, and continued significant contributions through his laboratory for students and industry visitors at Hyogo University.



#### Keisuke Kojima

Mitsubishi Electric Research Laboratories, USA For outstanding contributions in semiconductor lasers, in particular high-speed uncooled Fabry-Perot and distributed-feedback (DFB) lasers for optical access and data communications, and narrow-linewidth DFB lasers for coherent optical communications.



#### Jeffrey H. Hunt

The Boeing Company, USA For novel applications of nonlinear optical science to interfacial industrial diagnostics, development of advanced and frequency-agile laser sources, manufacturing metrology, transspectral detection including imaging and communications, and information assurance technologies.



#### Kazuro Kikuchi

University of Tokyo, Japan For pioneering contributions to coherent optical fiber communications including characterizations of the phase noise of semiconductor lasers, analyses of nonlinear transmission characteristics of optical fibers, and the proposal of digital coherent optical communication systems



Rice University, USA For pioneering contributions to fundamental optical studies of nanostructures, including carbon nanotubes and semiconductor heterostructures, and their optoelectronic device applications.



#### Todd D. Krauss

University of Rochester, USA For major contributions to the measurement and understanding of the spectroscopy and excited-state relaxation dynamics in semiconductor nanocrystals and carbon nanotubes at both the ensemble and singleparticle levels.



#### Ruxin Li

Shanghai Institute of Optics and Fine Mechanics, China For his outstanding contribution in the development of ultra-highintensity femtosecond lasers, laser wake-field acceleration, highorder harmonic generation and filamentation nonlinear optics.



#### Sophie La Rochelle

Université Laval, Canada For contributions to optical communications by proposing innovative fiber optic components such as superstructured fiber Bragg gratings for chromatic dispersion equalizers, multiwavelength fiber lasers and optical code-division multiplexing.



Marko Lončar Harvard University, USA For seminal contributions to diamond nanophotonics, nanoscale optomechanics and photonic crystal devices.



Sang Bae Lee Korea Institute of Science & Technology, Korea For significant contributions to the development of optical fiber devices, including fiber gratings and fiber lasers for their applications to optical communications and fiber sensors.



Hans-Peter Loock Queen's University, Canada For innovative uses and development of fiber optic devices in chemical sensing and detection.



**Qingming Luo** Huazhong University of Science and Technology, China

For pioneering contribution in optical neuroimaging and applications, including functional imaging of human brain activity, laser speckle imaging of cerebral blood flow and blood vessels, and mapping brain-wide neuronal networks.



#### Alexander I. Lvovsky

University of Calgary, Canada For pioneering contributions to the technology of preparation, manipulation, characterization and storage of quantum states of light for applications in quantum information processing and communication.



Dan M. Marom Hebrew University, Israel For innovations in optical information processing of spectrally dispersed light, leading to the invention of the wavelength-selective switch, now a fundamental building block of optical networks.



**R.J. Dwayne Miller** *Max Planck Institute for the Structure and Dynamics of Matter, Germany* For his groundbreaking development of ultrabright femtosecond electron sources for probing atomic motions on the primary timescales governing chemistry.



Tanya Monro

University of South Australia, Australia For scientific contributions of

international significance to optical glass materials and fibers, photonics and optical physics, most notably in nanophotonics for nonlinear optics and sensing.



#### Moshe Nazarathy Technion, Israel Institute of Technology, Israel

For inventing the time-lens concept in ultrafast optics, for technology and commercial development of broadband linearized analog optical transmission, and more recently for contributions to energy-efficient signal processing for coherent photonic communication.



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 freeformsurface design.



#### Allard P. Mosk

University of Twente, The Netherlands For pioneering the development of wavefront-shaping methods to control light propagation through scattering media, thereby opening up new perspectives on optical imaging and focusing through strongly scattering materials.



Kaoru Minoshima The University of Electro-Communications, Japan For seminal contributions to advanced research on fundamental science and applied technology in precision metrology using ultrafast optics and optical frequency combs.



### William J. Munro

NTT Basic Research Labs, Japan For achievements in optics and photonics, as a key bridge between academia and industry in the optical quantum information field.



Franco Nori

RIKEN, Japan, and the University of Michigan, USA For fundamental contributions to quantum information science and optics, including circuit quantum electrodynamics, and the interface between quantum optics and quantum circuits.



Malini Olivo

Singapore Bioimaging Consortium, A\*STAR, Singapore, and NUI Galway, Ireland For pioneering contribution in clinical photodiagnostics in the area of clinical spectroscopy and imaging in early cancer detection and phototherapeutics of cancer.



Michael S. Patterson McMaster University, Canada For fundamental contributions to the theoretical understanding and innovative application of lighttissue interactions in diagnosis and therapy.



Viktor A. Podolskiy

University of Massachusetts Lowell, USA For pioneering scientific contributions to the fields of strongly anisotropic metamaterials, plasmonics and the development of fundamental understanding of nonlocal effects in optical nanostructures.



Friedrich-Schiller-Universität Jena, Germany

For groundbreaking contributions to spatio-temporal nonlinear dynamics in discrete optics, for the observation of light bullets, and for seminal contributions to metamaterial science and nanophotonics.



Gabriel Popescu University of Illinois at Urbana-Champaign, USA For novel quantitative nanoscale phase imaging of cells and tissues.



Ulf Peschel Friedrich-Schiller-Universität Jena, Germany For seminal contributions to the investigation of conservative and dissipative optical solitons and of the field dynamics in photonic lattices and PT-symmetric systems.



Rajeev Jagga Ram Massachusetts Institute of Technology, USA For fundamental investigation of semiconductor laser sources and the integration of photonics with CMOS.



Yunjiang Rao University of Electronic Science and Technology of China, China For significant and sustained contributions to optical fiber sensors and their applications, and for outstanding leadership in promoting fiber optics in China.



David Howard Reitze California Institute of Technology, USA For significant contributions to the fields of ultrafast optics, spectroscopy, and gravitationalwave interferometry as well as for overall leadership of LIGO.



Roland Ryf Bell Labs, Alcatel-Lucent, USA

For multiple contributions to optical switching and multiplexing technology including MEMS and liquid-crystal-on-silicon subsystems and spatially multiplexed transmission systems.



#### **Brian Matthew Salzberg**

University of Pennsylvania, USA For development of optical methods in cell physiology and neuroscience, including the discovery of voltagesensitive dyes and calcium indicator dyes, and functional imaging using these probes.



#### Konstantin V. Sokolov University of Texas M. D. Anderson Cancer Center, USA For key contributions to the development and applications of plasmonic nanoparticles for imaging and therapy in biomedicine.



Limin Tong Zhejiang University, China For seminal work in optical nanofibers and significant contributions to nanophotonics.



#### Vahid Sandoghdar

Max Planck Institute for the Science of Light, Germany For pioneering work in the field of nano-quantum-optics through the elegant combination of concepts from quantum optics, single-molecule spectroscopy, scanning probe microscopy and plasmonics.



Regina Soufli Lawrence Livermore National Laboratory, USA For pioneering contributions to the development and characterization of extreme ultraviolet, X-ray and gamma-ray optics.



#### Norbert Scherer

University of Chicago, USA For discovery of plasmonic optical trapping of noble-metal nanoparticles, for development of methods for two- and three-dimensional optical trapping of anisotropic nanomaterials and for demonstrating "optical binding" in the Rayleigh regime.



Jun Tanida

Osaka University, Japan For pioneering contributions to optical computing through outstanding research and sustained leadership for the creation of a new field of information photonics that merges optics, photonics and informatics.



Michael Vasilyev

University of Texas at Arlington, USA For pioneering experimental and theoretical contributions to multimode phase-sensitive optical parametric amplifiers, in fibers for noise-free amplification of communication signals and in crystals for noise-free amplification of images.



Guillaume Georges Vienne

Data Storage Institute, A\*STAR, Singapore, and Nanyang Technological University, Singapore For contributions to design, fabrication and characterization of special optical fibers, including rare-earth-doped fibers, photonic crystal fibers and microfibers, and to their applications.



**Yongtian Wang** 

Beijing Institute of Technology, China For significant contributions in both research and education in the fields of optical design and CAD, augmented reality and advanced 3-D display.



Michael Withford Macquarie University, Australia For pioneering work developing novel 3-D optical chips, and on translating scientific research to end-users in the industry and university sectors.



#### Maciej Wojtkowski

Institute of Physics at Nicolaus Copernicus University, Poland For large impact in the field of optical coherence tomography (OCT) with applications in ophthalmology, in particular spectral OCT, with improved speed and sensitivity over standard OCT method.



Chongjin Xie Alibaba Group, USA For discoveries and inventions in the area of polarization and nonlinear effects in fibers.



**Changhuei Yang** *California Institute of Technology, USA* For outstanding contributions to high-efficiency microscopy and phase-conjugation-based scattering reversal in tissues.



Xiaotian Steve Yao General Photonics Corporation, USA For the invention, development and commercialization of the optoelectronic oscillator and optical polarization devices and instruments.



Michalis N. Zervas University of Southampton, United Kingdom For seminal contributions to the development of advanced optical fiber amplifier configurations, fiber distributedfeedback lasers, Bragg grating theory and devices, high-power fiber lasers and nonlinear fiber optics.



Weili Zhang Oklahoma State University, USA For outstanding contributions to terahertz subwavelength photonics, including plasmonics, metamaterials and invisibility cloaking, and their advancement in China.



Xiang Zhou Google Inc., USA For outstanding contributions to high-spectral-efficiency coherent optical transmission systems and technologies.