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Metamaterials, Metadevices, and Metasystems 2017
(OP101)

Conference Chairs: Nader Engheta, Univ. of Pennsylvania (USA); Mikhail A. Noginov, Norfolk State Univ. (USA); Nikolay I. Zheludev, Optoelectronics Research Ctr. (United Kingdom), Nanyang Technological Univ. (Singapore)

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Metamaterials and artificial electromagnetic media that are structured on the subwavelength scale were initially suggested for the negative-index ‘superlens’. Later, as metamaterials became a paradigm for engineering electromagnetic space and controlling the propagation of waves, the field of transformation optics was born. The research agenda is now shifting towards achieving tunable, switchable, nonlinear, sensing and data processing functionalities. This heralds the emergence of the new fields of meta-devices and metasystems with unique and useful functionalities, realized by the structuring of functional matter on the subwavelength scale. In 2014, the conference has evolved from the SPIE Conference “Metamaterials: Fundamentals and Applications” and now broadens its remit. It will be a platform to discuss cutting-edge research on photonic, terahertz, microwave, acoustic and mechanical metamaterials, metadevices and metasystems with advanced functionalities attained through the exploitation of the entire plethora of classical and quantum mesoscale and nanoscale forces and interactions.

IMPORTANT DATES

Abstracts Due: 23 JANUARY 2017
Acceptance Notification: 3 APRIL 2017
The contact author will be notified of abstract acceptance by email.
Manuscript Due Date: 10 JULY 2017

Please Note: Submissions imply the intent of at least one author to register, attend the symposium, present the paper as scheduled, where it is an oral or poster presentation, and submit a full manuscript by the deadline.
Nanoscale systems have peculiar optical properties, deriving from confinement in one or more dimensions, efficient energy and charge transfer and enhanced role of interfaces. As nanophotonic properties can be finely tailored by controlling the dimensions, material properties and surface chemistry, fabrication, and synthesis issues are central to emerging applications. Continuous technological improvements open the way to novel nanodevices at the forefront of scientific knowledge, which exploit interaction phenomena between electromagnetic waves and materials, ranging from superconductivity to quantum interference.

Further opportunities are presented by hybrid materials, e.g. nanostructured inorganic materials combined with organic molecules or polymers. Such hybrids can exhibit properties or combinations of properties impossible for conventional materials. Efforts to combine the advantages and to eliminate the shortcomings of vastly different materials, such as inorganic semiconductors, polymers, and biological materials, include studies of nanoparticles with chemically functionalized surfaces embedded in various matrices. Nanophotonic processes are also exhibited in many other biological and designed biomimetic materials. A better understanding and control of all these systems and the optical processes they support will speed the delivery of new applications, particularly in the sensor area.

The objective of this conference is to convene from industry, academia, government and other research organizations, scientists and researchers interested in the advances of nanophotonics and the optical applications of nanomaterials, to discuss developments in the processing, characterization, and simulation of nanomaterials and systems for novel photonic applications.

This year, the conference will focus on multi-functional nanomaterials, specifically in semiconductor/metal oxide materials and their optical and catalytic properties, fundamental research on the optical properties of nanocrystals, nanoscale structures, related optical property determination and their relationship, nanocrystalline surface and interface optics, nanofabrication, processing, templates, and device design, optical and optoelectronic materials based on nanoscale semiconductor and other nanocrystals, quantum dots and quantum wells, optical, magnetic, and transport properties of superconducting nanostructures, organic and hybrid materials for nanophotonics, optical nanosensors, functionalized nanoparticles, and detectors, multifunctional nanocomposite optical components, macroscopic systems exploiting nanostructured materials, self-organized nanocrystals, nanodomains, and nanodroplets, nanophotonic applications in biological, chemical, and environmental monitoring, optical materials base on Sol-Gel preparation, and nanowires for solar applications.

Papers are solicited in the following and related areas:
- metal oxide materials and their optical and catalytic properties
- fundamental research on the optical properties of nanocrystals
- nanoscale structures, related optical property determination and their relationship
- nanocrystalline surface and interface optics
- nanofabrication, processing, templates, and device design
- optical and optoelectronic materials based on nanoscale semiconductor and other nanocrystals
- quantum dots and quantum wells
- optical, magnetic, and transport properties of superconducting nanostructures
- organic and hybrid materials for nanophotonics
- optical nanosensors, functionalized nanoparticles, and detectors
- multifunctional nanocomposite optical components
- macroscopic systems exploiting nanostructured materials
- self-organized nanocrystals, nanodomains, and nanodroplets
- nanophotonic applications in biological, chemical, and environmental monitoring
- optical materials base on Sol-Gel preparation
- nanowires for solar applications.
Active Photonic Platforms IX (OP103)

Conference Chairs: Ganapathi S. Subramaniam, Sandia National Labs. (USA); Stavroula Foteinopoulou, Univ. of New Mexico (USA)

Program Committee: Andrea Ali, The Univ. of Texas at Austin (USA); Paul V. Braun, Univ. of Illinois at Urbana-Champaign (USA); Che Ting Chan, Hong Kong Univ. of Science and Technology (Hong Kong, China); Zhigang Chen, San Francisco State Univ. (USA); Dmitry N. Chigrin, RWTH Aachen Univ. (Germany); Shanhui Fan, Stanford Univ. (USA); Didier Felbacq, Univ. Montpellier 2 (France); Joseph W. Haus, Univ. of Dayton (USA); Stephen Hughes, Queen's Univ. (Canada); Boubacar Kante, Univ. of California, San Diego (USA); A. F. M. Koenderink, FOM Institute for Atomic and Molecular Physics (Netherlands); Alexander V. Kildishev, Purdue Univ. (USA); Yury S. Kivshar, The Australian National Univ. (Australia); Cefe López, Consejo Superior de Investigaciones Científicas (Spain); Nicolae-Coriolan Panoiu, Univ. College London (United Kingdom); Michelle L. Povinelli, The Univ. of Southern California (USA); Christophe Sauvan, Lab. Charles Fabry (France); Jörg Schilling, Martin-Luther-Univ. Halle-Wittenberg (Germany); Gennady B. Shvets, The Univ. of Texas at Austin (USA); Volker J. Sorger, The George Washington Univ. (USA); Andrey A. Sukhorukov, The Australian National Univ. (Australia); Kosmas L. Tsakmakidis, Univ. of California, Berkeley (USA); Georgios Veronis, Louisiana State Univ. (USA); Daniel M. Wasserman, Univ. of Illinois at Urbana-Champaign (USA); Ralf B. Wehrspohn, Fraunhofer-Institut für Werkstoffmechanik (Germany); Sharon M. Weiss, Vanderbilt Univ. (USA); William Whelan-Curtin, Univ. of St. Andrews (United Kingdom)

Artificially patterned photonic materials are key media in enabling transformative light-matter interactions. Incorporating active components, such as gain, tuneable or non-linear materials takes the functionality of these man-made structures to a higher level, enabling entirely new regimes of light control. Structured materials with active components are most promising platforms for a wide range of applications including chip-scale all-optical computing and communications, nanoscale threshold-less lasing, and biological/chemical sensing. Current open directions include incorporation of active elements (such as quantum dots) inside structured photonic materials, dynamic control of material optical properties, topological phenomena in photonic systems, non-classical sources, absorption and thermal management, as well as active carbon-based and atomically thin photonic materials.

This conference aims to bring together scientists and engineers working in the emerging field of active photonic platforms, to compare methods and results, identify novel applications, and cross-fertilize among various application fields. Topics will cover active photonic platforms ranging from THz to the ultraviolet regime. Contributions from industry, government, academia, and other research organizations are solicited in areas including:

- topological photonic platforms
- PT-symmetric, non-Hermitian and pseudo-Hermitian photonic systems
- theory and modeling of non-linear, gain, and time-dependent photonic media
- nanolasers and integrable chip-scale light sources
- photonic structures for quantum information: non-classical sources and detectors
- emission control in structured photonic environment: weak and strong coupling, cavity QED; polariton, quantum dot and random lasers
- tuneable and dynamically changeable optical properties and photonic devices
- phase-change materials for photonic devices
- magneto-photonic platforms
- photonic memory devices
- advances in fabrication of photonic structures with active materials
- physics and applications of nanoscale sources (e.g. quantum dots, quantum wires, NV-center etc.) for photonic devices
- graphene, carbon-based, and atomically thin materials for photonic and optoelectronic devices
- non-linear optical phenomena, materials, and devices; novel SHG and THG phenomena
- novel absorption and thermal management platforms
- photovoltaics, thermophotovoltaics and photodetectors
- chemical sensors and biosensors based on active control of light; optofluidic devices.

This conference will confer a best student paper award. Only contributed papers both submitted and presented by a student are eligible for this award. The award will be presented with an original SPIE certificate and announced at the conclusion of the meeting. To be considered for this award, student authors/presenters should include the phrase “Student Contribution:” at the beginning of the 250-word abstract for technical review.
Plasmonics: Design, Materials, Fabrication, Characterization, and Applications XV (OP104)

Conference Chairs: Din Ping Tsai, National Taiwan Univ. (Taiwan); Takuo Tanaka, RIKEN Ctr. for Advanced Photonics (Japan)

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Plasmonics: Design, Materials, Fabrication, Characterization, and Applications is currently undergoing intense developments. Novel plasmonic materials, structures, and phenomena covered under this topic span broad multidisciplinary interests from fundamental optics, physics, and chemistry to applications in nanophotonics, biophotonics, green photonics, and biomedicine.

Papers are solicited in the following areas:

THEORY, SIMULATION, AND DESIGN ACROSS ALL SUBAREAS
- plasmonic phenomena and effects
- ultrafast plasmonic effects and coherent control
- plasmon polaritons
- surface-enhanced Raman scattering
- plasmon-enhanced nonlinear phenomena
- luminescence enhancement and quenching
- quantum nanoplasmics: QED effects, plasmon-assisted quantum information, spasing, and nanolasing in plasmonic nanostructures
- microscopic theory of plasmonic properties
- plasmonic imaging, including probe ultramicroscopies, superlenses, and hyperlenses
- novel plasmonic systems such as graphene
- plasmonic Fano resonances
- electron-plasmon interactions
- active plasmonics theory and design.

PLASMONIC MATERIALS AND STRUCTURE FABRICATIONS
- nanofabrication of novel materials
- chemical fabrication (bottom up)
- lithographic and nanopatterning fabrication (top down)
- biomimetic and bio-inspired fabrication
- active, tunable, and reconfigurable methods.

PLASMONIC PHENOMENA AND CHARACTERIZATION
- spectroscopies (spectral, time-domain, frequency-domain, and multidimensional)
- local probes, nano-optics, and near field phenomena
- plasmon-assisted PEEM and energy-loss spectroscopy and visualization of plasmonic phenomena
- nonlinear and coherent optical properties
- plasmonic enhanced phenomena: SERS, SEIRA, nonlinear generation, luminescence, including molecules and nanostructured metals
- extraordinary transmission, diffractive, and refractive phenomena
- novel plasmonic systems such as graphene
- Fano resonances in nanoplasmics systems
- plasmon polariton propagation in arrays of metal nanoparticles and metal plasmonic waveguides
- semiconductor plasmonics
- fundamental physics of left-handed (negative-refraction) plasmonic materials
- active plasmonics.

PLASMONICS DEVICES AND SYSTEMS
- plasmonic sensors
- nanoplasmics waveguides and resonators
- plasmonic nanocircuits; logical nanoscale elements
- plasmonic ultramicroscopies and nanoscopic spectroscopies
- plasmonics-assisted memory
- plasmonic transistors
- plasmonic nanolasers and spasers
- nanoplasmic antennas and their applications in nanoscopes, photodetectors, solar cells, and lighting devices
- prospective graphene nanoplasmic devices
- sensing based on Fano resonances
- modulators and switches based on active plasmonics
- low-frequency plasmons and their applications
- solar energy harvesting
- devices for telecommunications
- medical and health applications.
This conference celebrates, quite generally, the legacy of Arthur Ashkin, whose early work on optical trapping has spawned enormous productivity and enhancement of fundamental knowledge across the sciences. Optical trapping has deepened our understanding of nano-scale molecular motors, helped unravel the mechanics of DNA and cells, and had far reaching impact on studies of statistical mechanics, soft condensed matter and hydrodynamic interactions. Novel sample syntheses are now providing unusual and powerful systems to manipulate with optical traps. Fundamental studies investigating the nature of the momentum of light offer tantalizing possibilities for harnessing counter-intuitive properties of light-matter interactions. Biological studies of single molecules have been enhanced with the establishment of optical force calibrations which now extend down to the 20 fN range, while optical torques have been calibrated down to 4 fN-microns. New applications continue to appear, for example as optical trapping is fused with other techniques such as Raman spectroscopy and fluorescence microscopy. Integrating optical micro-manipulation with microfluidic platforms is a current hot topic in the field. Investigations into particle dynamics on extended optical landscapes offer a uniquely valuable model of thermodynamic systems, and have been examined to study stochastic resonance, crystal nucleation, and optical binding, among others. Each year this conference draws well over one hundred presentations and an even larger number of participants. The poster sessions take place with sufficient room and degree of refreshment to ensure an excellent level of interaction. Notably, this conference which is now in its 13th year, has sustained a truly international character. The proceedings of the conference contains a large collection of relevant papers, making a valuable contribution to the field. Papers are solicited on (but not restricted to) the following areas:

- cavity optomechanics
- toward (or in) the quantum limit of optomechanics
- optical angular momentum
- studies of active swimmers/hydrodynamics
- statistical mechanics of small systems
- single molecule manipulation and study
- optically driven micro rheology and mechanical properties
- enhanced sensitivity and resolution of optical force actuators
- photonic devices for optically induced forces
- “gonzo” trapping (i.e., trapping at extremes)
- using the photonic toolbox to study cells and their organelles
- optically bound matter
- optofluidics and optically shaped structures
- optical manipulation of matter through gaseous media
- foundations of the electromagnetic theory of force and momentum
- radiation pressure
- near-field micromanipulation, plasmonic, and nanoparticle trapping
- beam shaping and aberation / wavefront correction
- optical sorting / optical lab-on-a-chip / microfluidics
- optically manipulated robotics and novel samples
- nanoscale assembly with optical forces
- optical tweezers coupled with novel forms of microscopy
- alternative and hybrid force systems (e.g., hybrid AFM-optical force systems, or combinations with acoustic, magnetic, or other forces)
- nonlinear optical responses mediated through forces (translation/electrostriction)
- studies of thermodynamic systems.

There will also be a special tutorial session, freely included and open to all attendees.

IMPORTANT DATES

Abstracts Due: 23 JANUARY 2017

Acceptance Notification: 3 APRIL 2017

The contact author will be notified of abstract acceptance by email.

Manuscript Due Date: 10 JULY 2017

Please Note: Submissions imply the intent of at least one author to register, attend the symposium, present the paper as scheduled, where it is an oral or poster presentation, and submit a full manuscript by the deadline.
Processes occurring only at interfaces play an essential role in many physico-chemical effects, ranging from energy conversion, to catalysis and biological membranes. Recent developments in organic and hybrid nanomaterials highlight the importance of surfaces and interfaces, also in quantum confined systems. At the same time, the study of the excited state properties in bulk materials, and their connection to material properties, such as structure and elemental composition, remains a relevant topic. The detailed study of the physics and physical chemistry in nanomaterials, and at their interfaces led to the development of specialized experimental and theoretical techniques with increasing complexity. New forms of non-linear spectroscopy, imaging, and scanned-probe techniques continue to emerge in conjunction with sophisticated theoretical methods capable of treating correlated systems of increasing size and over timescales of femto- to nanoseconds.

The intent of this conference is to bring together an interdisciplinary group of scientists from academia, industry, and government laboratories, who study fundamental processes of novel semiconductor materials and their interfaces, also at the nanoscale. For the 2017 call, the scope of the conference will focus on the following topics:

- electron and energy transfer mechanisms at interfaces
- physical processes in solar energy conversion
- photophysics of novel perovskite-based nanomaterials
- confinement effects in nanostructures
- exciton physics in transition metal dichalcogenides
- emerging experimental tools to study interfaces and nanomaterials
- advances in modeling of electronic processes in nanomaterials
- multidimensional spectroscopies
- physical understanding of biological systems
- carrier transport in complex systems
- structure-property relations in nanomaterials
- interface engineering.

We plan to organize a joint session with the “Organic Photovoltaics XVIII” conference.
Low-dimensional material systems possessing at least one of their dimensions in the nanometer scale offer intriguing physical properties and undiscovered pathways toward novel electronics, photonics, sensors, and energy conversion and storage. Design, fabrication, and characterization of novel device platforms that employ low-dimensional material systems are also of interest, as well as interfacing and integration of such devices toward novel electronics, photonics, sensors, and energy conversion and storage.

Topics of interest include:
- synthesis of zero-dimensional material systems (e.g., core-shell nanoparticles, quantum dots) and their device integration
- synthesis of one-dimensional material systems (e.g., nanowires and nanorods), control of their orientation and morphology, and device integration
- templated, catalyzed and uncatalyzed, tip assisted, field induced, locally heated synthesis methods of low-dimensional materials
- self-limiting deposition technique such as atomic layer deposition (ALD) that can produce ultrathin and conformal thin film structures for many applications including thin film devices, display technology, energy storage and capture, as well as solid state lighting
- role of strain and extended defects on synthesis and spatial ordering of nanoscale structures and on their optical and transport properties
- introduction of electrically/optically active impurities and their roles in low-dimensional structures; dopant spatial distributions and segregation
- electrical contact formation and interface properties between nanoscale structures and metal contacts
- nanoscale synthesis compatible to and integral onto CMOS devices: scalable and mass-manufacturable interfacing for electronics, photonics, optoelectronics, sensing and energy conversion
- 3D heterogeneous integration, application of advanced patterning techniques for positioning and dimension control of nanostructures, integration with MEMS
- heterogeneous interface characteristics, DC, RF and high frequency characterization, defects, noise, traps, coherent- incoherent structures: mechanical, acoustic, magnetic, and multiferroic properties
- physical characteristics of nanometer-scale structures analyzed individually and in ensembles, ex-situ and in-situ studies
- novel electrical, optical, mechanical and structural characterization techniques for the low-dimensional structures and device platforms.
There is a huge demand for research tools allowing one to “see” nanostructures and to characterize and understand materials as well as biochemical processes at nanoscale resolution. Optical techniques such as imaging and spectroscopy at nanoscale make this possible. Optical imaging with spatial resolution far beyond the diffraction limits of light together with spectroscopic studies with highly localized optical fields have pushed the limits of spatial resolution and sensitivity to new scales. Continuous improvements open ways to novel applications at the forefront of scientific knowledge.

The purpose of this interdisciplinary conference is to encompass all aspects of nano-imaging and nano-spectroscopy, including theory and novel concepts, experimental demonstration of novel concepts, major developmental progress and applications to any field in science, in particular, biology, medicine, and the material sciences.

Papers are solicited in (but not restricted to) the following areas:

**FAR-FIELD SUPER-RESOLUTION IMAGING/ NANOIMAGING TECHNIQUES, SUCH AS:**
- stimulated emission depletion (STED) microscopy
- photoactivated localization microscopy (PALM)
- stochastic optical reconstruction microscopy (STORM)
- direct stochastic optical reconstruction microscopy (dSTORM)
- structured illumination microscopy (SIM)
- ground state depletion-individual molecule return (GSDIM) microscopy
- reversible saturable optical fluorescence transitions (RESOLFT) microscopy.

**NEAR-FIELD SUPER-RESOLUTION IMAGING/ NANOIMAGING TECHNIQUES, SUCH AS:**
- near-field scanning optical microscopy (NSOM/ SNOM)
- tip-enhanced Raman scattering (TERS) microscopy
- tip-enhanced photoluminescence (TE-PL) microscopy
- tip-enhanced coherent anti-Stokes Raman scattering (TE-CARS) microscopy.

**OTHER SUPER RESOLUTION OPTICAL IMAGING TECHNIQUES, SUCH AS:**
- saturated excitation (SAX) microscopy
- other nonlinear optical microscopy.
UV and Higher Energy Photonics: From Materials to Applications 2017 (OP109)

Conference Chairs: Gilles Lérondel, Univ. de Technologie Troyes (France); Satoshi Kawata, Osaka Univ. (Japan); Yong-Hoon Cho, KAIST (Korea, Republic of)

Program Committee: Sanford A. Asher, Univ. of Pittsburgh (USA); Steve Blair, The Univ. of Utah (USA); Zhanghai Chen, Fudan Univ. (China); Yasin Ekinci, Paul Scherrer Institut (Switzerland); Naomi J. Halas, Rice Univ. (USA); Hans D. Hallen, North Carolina State Univ. (USA); Chenupati Jagadish, The Australian National Univ. (Australia); Junyong Kang, Xiamen Univ. (China); Yoichi Kawakami, Kyoto Univ. (Japan); Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of); Paul T. Matsudaia, National Univ. of Singapore (Singapore); Eva Monroy, CEA Grenoble (France); Keith A. Nugent, Univ. of Melbourne (Australia); Yukihiro Ozaki, Kwansei Gakuin Univ. (Japan); Jérôme Plain, Univ. de Technologie de Troyes (France); Atsushi Taguchi, Osaka Univ. (Japan); Richard P. Van Duyne, Northwestern Univ. (USA); Remo Proietti Zaccaria, Istituto Italiano di Tecnologia (Japan)

Recently, there has been a rapid and significant progress in the field of UV and higher energy photonics (UV to EUV) due to the availability of new UV and high energy light sources. Nano-materials such as nucleotides and proteins known as the essential biomolecules in living cells and semiconducting or plasmonic materials used in advanced nano-devices are analyzed and detected, imaged, and/or manipulated with use of UV and higher energy photons. Starting from the material growth related aspects, this conference includes theories and novel concepts on UV and higher energy photonics. It also includes experiments and developments of methods and instruments, which are used as devices for applications in catalysis, nano-lithography, nano-imaging, disinfection, analytical sensing but also in nano-photonics, bio-medical photonics, materials sciences and green and environmental sciences.

UV AND HIGHER ENERGY MATERIALS AND LIGHT SOURCES
• high band gap semiconductors
• LEDs and lasers for UV and higher energy
• nonlinear and ultrafast photonics for UV and higher energy
• fiber optics for UV and higher energy
• photonic crystal fibers
• high harmonic generation
• UV to EUV optics and sources.

UV AND HIGHER ENERGY MICROSCOPY
• resonant Raman microscopy
• nonlinear microscopy
• super-resolution microscopy
• plasmonics in UV and DUV
• coherent scattering imaging.

UV AND HIGHER ENERGY SPECTROSCOPY
• resonance Raman spectroscopy
• absorption spectroscopy
• fluorescence spectroscopy.

APPLICATIONS OF UV, DEEP UV, VACUUM UV, AND EXTREME UV PHOTONICS
• holography
• lithography
• photocatalysis
• decontamination
• material properties
• materials processing
• photoreists
• photodissociation
• photodamage
• environmental analysis
• energy production.

UV AND DEEP UV BIOSENSING AND ANALYSIS WITH UV AND HIGHER ENERGY PHOTONICS
• biosensor and analysis
• structure and dynamics of biomolecules
• native-fluorescence
• photochemical effect on biomolecules.
Biosensing and Nanomedicine X (OP110)

Conference Chairs: Hooman Mohseni, Northwestern Univ. (USA); Massoud H. Agahi, Harbor-UCLA Medical Ctr. (USA); Cedars-Sinai Medical Ctr. (USA); Manijeh Razeghi, Northwestern Univ. (USA)

Program Committee: Gert Cauwenberghs, Univ. of California, San Diego (USA); Philippe M. Fauchet, Vanderbilt Univ. (USA); Ryan M. Gelfand, CREOL, The College of Optics and Photonics, Univ. of Central Florida (Canada); David H. Gracias, Johns Hopkins Univ. (USA); Kimberly S. Hamad-Schifferli, Massachusetts Institute of Technology (USA); Yu-Hwa Lo, Univ. of California, San Diego (USA); Omer G. Memis, Northwestern Univ. (USA); Masoud Panjehpour, Thompson Cancer Survival Ctr. (USA); Qimin Quan, Harvard Univ. (USA); Björn M. Reinhard, Boston Univ. (USA); Adam T. Woolley, Brigham Young Univ. (USA); John M. Zavada, Polytechnic Institute of New York Univ. (USA)

The explosion of research and development in the field of biosensing over the last decade has led to new discoveries over a wide variety of areas. Biosensing has had a major impact in commercial, medical, research, and homeland security applications and is poised to take the next step in integration with other mature technologies leading to a potential revolution in personalized medicine. The robustness of multi-modal sensing schemes has led to a significant attention to integration of a plurality of different sensors into small, and preferably single-chip sensing micro-systems. The combination of nano-sensing and nanomedicine could eventually lead to a true Theranostics. A major purpose of this conference will be to bring together researchers and engineers who work on the different aspects of these intriguing areas, and thus to provide an interdisciplinary atmosphere to foster new innovations in nanomedicine, biosensing, bioMEMS, biomimetics and biosensors, as well as theoretical and experimental tools that support and enable these innovations.

The conference includes, but is not limited to, the following topics:

- nano-structured bio-sensing
- graphene, carbon-nanotube, and quantum-dot biosensors
- nano-photonic and plasmonic bio-sensing
- nano drug delivery
- nanotoxicity
- molecular imaging and therapy
- bio-inspired components and systems
- bio-inspired sensory processing
- implantable or biodegradable electronics
- neurophotonics and neuroimaging
- nano-bio interactions
- nano-composite and hybrid biosensors
- optical control of biological functions
- nanocrystals in biomedical imaging and diagnostics.
CALL FOR PAPERS

Optical Sensing, Imaging, and Photon Counting: Nanostructured Devices and Applications 2017 (OP111)

Conference Chairs: Manijeh Razeghi, Northwestern Univ. (USA); Oleg Mitrofanov, Univ. College London (United Kingdom)

Conference Co-Chair: Gail J. Brown, Air Force Research Lab. (USA)

Program Committee: Ravi Athale, Office of Naval Research (USA); Arvind I. D’Souza, DRS Sensors & Targeting Systems, Inc. (USA); Takeharu Goji Etoh, Ritsumeikan Univ. (Japan); Robert J. Grasso, EOIR Technologies (USA); Christoph H. Grein, Univ. of Illinois at Chicago (USA); Carl Jackson, SensL (Ireland); Gerasimos Konstantatos, ICF – Instituto de Ciencias Fotónicas (Spain); Jay Lewis, Defense Advanced Research Projects Agency (USA); Alizhen Li, Shanghai Institute of Microsystem and Information Technology (China); Ryan McClintock, Northwestern Univ. (USA); Philip Perconti, U.S. Army Research Lab. (USA); Usha Varshney, National Science Foundation (USA); Yong-Hang Zhang, Arizona State Univ. (USA)

Nanoscience and nanoengineering enable the design and fabrication of optical sensors and imagers with properties that can surpass traditional bulk sensors in virtually any metric, for example, wavelength range, sensitivity, size, noise, or speed. These properties may derive from quantum phenomena, nanostructuring or ordering, or may rely on their length scales to visualize physical or chemical events that happen at the nanoscale. This multidisciplinary symposium will bring together scientists and engineers developing detectors that leverage nanoscale in their design and researchers using these devices to probe nanoscale systems, a task that may pose challenging requirements for the device performance. The discussion will cover the latest developments and trends in optical sensing as well as current and emerging applications of optical sensors.

The conference program will consist of oral and poster presentations on topics that include, but are not limited to:
- optical sensors and imagers for UV, VIS, IR, and THz, particularly those utilizing nanostructures such as superlattices, quantum wells, quantum wires, and epitaxial and colloidal quantum dots
- optical fiber sensors based on nanostructured coatings
- single-photon detectors and counters
- novel concepts in nanoengineered sensors
- nanoengineering techniques in the fabrication of detectors and imagers
- advanced ROICs and signal processing algorithms for increased detector sensitivity, speed, multi-color operation, and other desired performance characteristics
- interface between sensors, optics, and objects at nanoscale
- applications of optical sensing in materials science, communications, quantum information science, quantum encryption, medical imaging, DNA sequencing, and others
- modeling of photon detection.

IMPORTANT DATES

Abstracts Due: 23 JANUARY 2017

Acceptance Notification: 3 APRIL 2017

The contact author will be notified of abstract acceptance by email.

Manuscript Due Date: 10 JULY 2017

Please Note: Submissions imply the intent of at least one author to register, attend the symposium, present the paper as scheduled, where it is an oral or poster presentation, and submit a full manuscript by the deadline.
NANOENGINEERING

Nanoengineering: Fabrication, Properties, Optics, and Devices IX (OP112)

Conference Chairs: Eva M. Campo, Bangor Univ. (United Kingdom); Elizabeth A. Dobisz, Spin Transfer Technologies, Inc. (USA); Louay A. Eldada, Quanergy Systems, Inc. (USA)

Program Committee: André-Jean Attias, Univ. Pierre et Marie Curie (France); Maziar Ghazinejad, California State Univ., Fresno (USA); Sarah Haigh, The Univ. of Manchester (United Kingdom); Ghassan E. Jabbour, Arizona State Univ. (USA); Robert Magnusson, The Univ. of Texas at Arlington (USA); Balaji Panchapakesan, Worcester Polytechnic Institute (USA); Won Park, Univ. of Colorado at Boulder (USA); Dorota A. Pawlak, Institute of Electronic Materials Technology (Poland); Michael T. Postek, National Institute of Standards and Technology (USA); Dianne L. Poster, National Institute of Standards and Technology (USA); Anne E. Sakdinawat, SLAC National Accelerator Lab. (USA); Jun Tanida, Osaka Univ. (Japan); Richard Tiberio, Stanford Univ. (USA); Chee Wei Wong, Columbia Univ. (USA); Wei Wu, The Univ. of Southern California (USA)

Nanoengineering is an essential bridge that utilizes nanoscience to enable a broad spectrum of totally new applications, functionalities, devices and products. Conventional manufacturing technologies such as logic, memory, and data storage have extended well into the nanometer regime. Over-extended technologies are pushing sizes and densities into ranges that challenge reliability and basic physics. Newly engineered materials, processes, and metrologies are emerging. Novel synthesized nanomaterials, both 2D and 3D, metatomaterials, nanotubes, nanowires, composites and ingenious controlled ensembles offer exciting opportunities. Newly attainable fabrication of miniature optical elements have enabled the development of micro/nano/quantum-scale optical, near field optics, and optoelectronic elements in ever more diverse application areas. New low power logic and memory devices, expanded functionality, systems on a chip, solar cells, energy storage devices, biotechnology, photonics, photovoltaics, molecular electronics and optics are emerging. Application areas are highly diversified include telecommunications, data communications, consumer electronics, microwave photonics, optical computing, neural networks, optical storage, non-volatile data storage, information display, optical imaging, printing, optical sensing, optical scanning, renewable energy harvest and storage, medical diagnostics, chemical/biological/environmental sensing, new nanomechanic applications, and new medical devices and prosthetic methods.

Critical to this realization of robust nanomanufacturing is the development of appropriate instrumentation, metrology, and standards. As novel applications emerge, the demand for highly sensitive and efficient measurement tools with the capability of rapid, automated and thorough coverage of large functional areas at high precision is emerging.

The newly emerging nanotechnologies present new opportunities and challenges in materials processing, device design, and integration. Drivers for commercial deployment include increased functionality, small form factor, performance, reliability, cost, as well as renewable energy and climate change mitigation.

A joint session with the Low-Dimensional Materials and Devices conference is being planned for the 2017 meeting.

To students and first-time presenters: to encourage and mentor young researchers, we are announcing a special session for students and first-time presenters. Please submit your abstract via the SPIE submissions system as instructed. Then, email your name, title, and submission tracking number to the conference chairs (erzebet930@gmail.com, e.campo@bangor.ac.uk, and lae3@columbia.edu).

Papers are solicited in the areas of:

INNOVATIVE PATTERNING, MATERIALS ENGINEERING, NANOFABRICATION, AND NANOLITHOGRAPHY
- electrospinning, imprinting, and embossing techniques
- fabrication, processing, and replication techniques
- directed self-assembly techniques
- engineered nano- and micro-structured materials
- synthesis of nanotubes, nanowires, and two-dimensional materials such as graphene
- stacked 2D atomic crystals
- molecular patterning and ordering

HIGH PRECISION NANOPositionING AND FEEDBACK, NEW METROLOGIES
- proximal probe manipulation techniques
- nanomotors and actuators
- nano-alignment techniques, tolerance
- triboology nanotechnologies
- new metrology instrumentation, methods, and standards for measuring nanodevices
- metrology for placement precision
- novel measurement and inspection methodologies
- high resolution optics, including full-field, near-field and scanned microscopy, scatterometry, and interferometric techniques
- x-ray techniques
- synchrotron techniques
- optical detectors for state of the art instrumentation
- particle beam (electron, ion) microscopy and elemental analysis
- atomic force microscopy.
DEVICES AND PROPERTIES OF NANOSTRUCTURES (EXPERIMENT AND/OR THEORY)

- nanoelectronic and nanomagnetic devices and structures
- waveguiding nanodevices and nanostructures
- nano-MEMS devices and structures
- near field optics based devices
- NOMS: Nano-Opto-Mechanical Systems
- photovoltaic cells and structures
- biological devices and structures
- molecular devices and structures
- atomic devices and structures
- quantum devices and structures
- nanosensors
- smart mechanical actuators
- nanotubes
- stacked 2D atomic crystals.

NANO- AND MICRO-OPTICS

- physics, theory, design, modeling, and numerical simulation of optical nano- and micro-structures
- diffractive and refractive micro-structures for beam shaping and manipulation
- photonic microcircuits in silica, polymer, silicon, compound semiconductors, ferroelectrics, magnetics, metals, and biomaterials
- 1D, 2D, and 3D photonic crystals
- quantum dots, wells, and wires
- guided-wave and free-space optical interconnects
- optical alignment, tolerance, and coupling
- characterization (optical, electrical, structural, etc.)
- integration with guided-wave systems
- integration with photonic devices including VCSELs, modulators, and detectors
- nano- and micro-optic-based optical components, modules, subsystems, and systems for communications, information processing, computing, storage, photovoltaic power generation, information display, imaging, printing, scanning, and sensing
- graphene-based devices
- molecular devices.

ENERGY HARVEST AND STORAGE NANOTECHNOLOGIES

- nanostructured materials for efficient light trapping, photon absorption, charge generation, charge transport, and current collection in photovoltaic cells and modules
- nanocomposites, nanocoatings, and nanolubricants for power-generating wind turbines
- nanocomposites for smart behavior: reciprocity in electroactuation
- nanotechnologies for batteries and ultracapacitors, including powder-based, carbon-nanotube-based, silicon-nanowire-based and graphene-based electrodes.

COMMERCIALIZATION OF NANO- AND MICRO-STRUCTURE-BASED DEVICES, MODULES, AND SYSTEMS

- nanomanufacturing methodology
- in-situ and in-operando inspection
- physics of the metrology processes, system-sample interaction
- 3D critical dimension metrology
- characterization of nanostructured functional surfaces
- characterization of nano-objects used in novel devices or products
- assembly and packaging
- reliability
- novel concepts are within the scope of this solicitation.

CALL FOR PAPERS

Ali Adibi, Editor-In-Chief

Authors are invited to submit an original manuscript to the Journal of Nanophotonics. The Journal of Nanophotonics (JNP) focuses on the fabrication and application of nanostructures that facilitate the generation, propagation, manipulation, and detection of light from the infrared to the ultraviolet regimes. JNP is covered by all major indexes and Journal Citation Reports.

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NANOE N G I N E E R I N G

Nanobiosystems: Processing, Characterization, and Applications X (OP113)

Conference Chairs: Norihisa Kobayashi, Chiba Univ. (Japan); Fahima Ouchen, Air Force Research Lab. (USA); Ileana Rau, Polytechnical Univ. of Bucharest (Romania)

Program Committee: Carrie M. Bartsch, Air Force Research Lab. (USA); Liming Dai, Case Western Reserve Univ. (USA); Ananth Dodabalapur, The Univ. of Texas at Austin (USA); James G. Grote, Air Force Research Lab. (USA); Emily M. Heckman, Air Force Research Lab. (USA); Kuniharu Ijiri, Hokkaido Univ. (Japan); Jung-II Jin, Korea Univ. (Korea, Republic of); Francois Kajzar, Polytechnical Univ. of Bucharest (Romania); Sang Nyon Kim, Air Force Research Lab. (USA); Oksana Krupka, Univ. d’Angers (France); Charles Y. C. Lee, Air Force Office of Scientific Research (USA); Misoon Y. Mah, Asian Office of Aerospace Research and Development (Japan); Bruce H. Robinson, Univ. of Washington (USA); Anna Samoc, The Australian National Univ. (Australia); Marek J. Samoc, Wroclaw Univ. of Technology (Poland); Niyazi Serdar Sariciftci, Johannes Kepler Univ. Linz (Austria); Kristi M. Singh, Air Force Research Lab. (USA); Andrew J. Steckl, Univ. of Cincinnati (USA); Morley O. Stone, Air Force Research Lab. (USA); Guru Subramanyam, Univ. of Dayton (USA); Perry P. Yaney, Univ. of Dayton (USA)

The area known as biotronics or bioelectronics is an interdisciplinary research field that includes elements from biology, chemistry, engineering and the physical sciences and can be broadened further to include nanotechnology and nanoscience. The convergence of these fields has led to exciting developments in the integration of biomaterials and bioprocesses to photonic and electronic applications. These have included biomaterials to replace organic and inorganic materials in photonic or electronic devices and biomimetic devices to improve upon existing technologies. Such developments may go a step further to include novel devices and applications that take advantage of these interdisciplinary technologies.

The objective of this conference is to bring together researchers and experts from a variety of fields including biology, physics, chemistry, optics, photonics, nanotechnology, engineering and materials science, who have an interest in the exploitation of biological materials and designs in optical, photonic and electronic devices. Sessions will cover topics in bio-based and bio-derived materials and their application to photonics and electronics devices as well as bio-inspired and biomimetic technology.

Papers are solicited in, but not limited to, the following areas:

- biomaterials and devices for photonics and electronics applications including LEDs, LETs, lasers, optical storage, optical switches, modulating devices, electronic components, sensors and BioFETs
- biomaterials for information processing and information storage
- biomaterials for IR applications
- biopolymers
- DNA photonics
- nonlinear optical processes in bio-materials
- biologically synthesized nanomaterials
- bio-based sensors
- biomimetic and bio-inspired technology including biomimetic optical devices and biomimetic robotics.
Nanostructured Thin Films X (OP114)

Conference Chairs: Yi-Jun Jen, National Taipei Univ. of Technology (Taiwan); Akhlesh Lakhtakia, The Pennsylvania State Univ. (USA); Tom G. Mackay, The Univ. of Edinburgh (United Kingdom)

Program Committee: Bharat Bhushan, The Ohio State Univ. (USA); Stephane Bruynooghe, Carl Zeiss AG (Germany); Francesco Chiadini, Univ. degli Studi di Salerno (Italy); Pankaj K. Choudhury, Univ. Kebangsaan Malaysia (Malaysia); Didier Felbacq, Univ. Montpellier 2 (France); François Flory, Institut Matériaux Microélectronique Nanosciences de Provence (France); Frédéric Guittard, Univ. de Nice Sophia Antipolis (France); Anders Kristensen, Technical Univ. of Denmark (Denmark); H. Angus Macleod, Thin Film Center, Inc. (USA); Geoffrey B. Smith, Univ. of Technology, Sydney (Australia); Motofumi Suzuki, Kyoto Univ. (Japan)

Nanoscience and nanotechnology have attracted enormous research and public interest for just about two decades. These terms cover all aspects of the production of materials, devices, and systems by manipulating matter at the nanoscale. Encompassing nanoscale science, engineering, and technology, nanotechnology involves imaging, measuring, modeling, and manipulating matter at this length scale. Nanostructured thin films display unique phenomena, thus enabling the improvement of traditional applications or the development of novel applications. The fabrication, characterization, modeling, and manipulation of nanostructured thin films are essential to further scientific progress.

This conference welcomes contributions from industry, academia, and government research organizations. Topics of interest cover any relevant aspects of nanostructured thin films, from modeling, fabrication, and characterization to practical applications. Topics include, but are not limited to:

• fabrication techniques
• characterization
• homogenization studies and modeling
• hybrid nanostructures
• multifunctionality at the nanoscale
• plasmonics
• organic and inorganic nanostructured thin films
• sculptured thin films
• nanostructured porous thin films
• two-dimensional materials
• carbon-based nanostructures
• topological insulators and photonic topological insulators
• hybrid nanostructures
• functionalization of nanostructures
• thin-film sensors
• superhydrophobicity
• biomedical applications
• bioinspired and biomimetic thin films
• structural evolution.

The conference will comprise several invited talks, contributed talks, and posters. Authors of selected papers from the conference will be invited to submit expanded papers to a Special Section of SPIE’s Journal of Nanophotonics.
For a few years, the spin degree of freedom has been directly used as an information support in nanometer-scale devices. Today applications mostly concern the huge market of hard-drive read heads, nonvolatile magnetic memories (MRAMs), or magnetic logic units. Recent developments are being considered for spin-based logic or quantum computing. New topics are emerging in frontier fields, e.g. Skyrmions and domain-wall manipulation, topological insulators, Majorana fermions, spin photonics and spin optics (the latter being based on recent developments in plasmonics), or spin-caloric phenomena. These advances make use of the fascinating developments of new materials.

The purpose of the conference is to provide a broad overview of the state-of-the-art and perspectives, bringing together experts from different communities: fundamental physics (experimental and theoretical), materials science and chemistry, fabrication processes and industrial developments, etc. Contributions for this conference are encouraged in particular in the following areas:

- spin-coherence, semiconductor spin physics, quantum wells and quantum dots
- magnetic nanostructures, micromagnetism, spin-precession, and magnonics
- spin-injection, spin-transfer, spin-Hall and related effects
- new materials (graphene and chalcogenides, oxides, organics, etc.)
- new structures and applications (magnetoresistive devices, MRAMs, spin transistors, crystalline tunnel barriers, etc.)
- spin photonics and spin optics.

IMPORTANT DATES

Abstracts Due: 23 JANUARY 2017

Acceptance Notification: 3 APRIL 2017

The contact author will be notified of abstract acceptance by email.

Manuscript Due Date: 10 JULY 2017

Please Note: Submissions imply the intent of at least one author to register, attend the symposium, present the paper as scheduled, where it is an oral or poster presentation, and submit a full manuscript by the deadline.
Quantum Photonic Devices (OP116)
Conferece Chairs: Cesare Soci, Nanyang Technological Univ. (Singapore); Mario Agio, Univ. Siegen (Germany); Kartik Srinivasan, National Institute of Standards and Technology (USA).

Optics and photonics enable devices that exploit the laws of quantum physics at a fundamental level, laying the ground for a second quantum revolution. Light is widely used in emerging quantum technologies, for example, to control and manipulate quantum states of matter, to generate and transmit qubits, to achieve quantum nonlinearities and many-body effects. In addition, advances in nanofabrication and circuit integration (e.g., silicon photonics, fiber optics, plasmonics) are crucial to translate proof of concepts into technological platforms for quantum simulations, metrology, sensing, imaging, communication and computing. These efforts are also benefiting from the emergence of new materials, methods and concepts that expand the possibilities for quantum systems and devices.

The aim of the Symposium is to provide a multidisciplinary forum for scientists and engineers to discuss the current progress, challenges and new ideas in the implementation of quantum photonics devices, to consider standardization and device specifications, and to identify new directions for quantum technologies based on optics and photonics. Contributions are solicited in areas focusing on:

- quantum photonic devices for simulations, metrology, sensing, imaging, communication, and computing
- quantum engineering, including nanofabrication and integration
- quantum control, including error correction and tolerance
- emerging new materials, methods and concepts for quantum photonic devices
- standardization and specifications
- novel photonics-based quantum technologies.

Quantum Nanophotonics (OP117)
Conference Chairs: Jennifer A. Dionne, Stanford Univ. (USA); Mark Lawrence, Stanford Univ. (USA).

Program Committee: Javier Aizpurua, Ctr. de Fisica de Materiales (Spain); Nader Engheta, Univ. of Pennsylvania (USA); Andrea Di Falco, Univ. of St. Andrews (United Kingdom); Andrei Faraon, California Institute of Technology (USA); Javier Garcia de Abajo, ICFO - Institut de Ciències Fotòniques (Spain); Mohammad Hafezi, Joint Quantum Institute (USA); Zubin Jacob, Purdue Univ. (USA); Marko Loncar, Harvard School of Engineering and Applied Sciences (USA); Sunil Mittal, Joint Quantum Institute (USA); Jeremy L. O'Brien, Univ. of Bristol (United Kingdom); Teri W. Odom, Northwestern Univ. (USA); Vladimir M. Shalaev, Purdue Univ. (USA); Matthew T. Sheldon, Texas A&M Univ. (USA); Ewald Verhagen, FOM Institute for Atomic and Molecular Physics (Netherlands); Ulrike Woggon, Technische Univ. Berlin (Germany).

Optics has long represented the frontline for both exploring and exploiting quantum mechanical effects. The nexus of these efforts spawned quantum optics, a field now poised to revolutionize key technologies including communications, computing, cryptography, and metrology to name a few. At the same time, advances in the fields of nanophotonics, plasmonics, and metamaterials have led to an unprecedented ability to confine and manipulate light. The stage seems set for quantum nanophotonic materials, devices, and systems though complex and often counterintuitive phenomena emerge when measuring and describing them.

This conference will review recent developments in quantum nanophotonics and facilitate exciting discussions between physicists, material scientists, and optical engineers on future directions and challenges within this burgeoning field. Contributions to this session will involve both theoretical and experimental work, with particular emphasis given to the following topics:

- single photon, plasmon, and polariton sources
- exotic entangled state preparation and manipulation
- topological photonic entanglement
- quantum plasmonics, metamaterials, and metasurfaces
- single photon modulators
- unidirectional photonic emitters
- squeezed states
- nanoscale atom traps
- high- and low-index control of quantum emitters and lifetime engineering
- quantum nanophotonic and plasmonic networks
- computing and cryptography with quantum nanophotonic components
- quantum optomechanics
- out-of-equilibrium and non-local behavior in quantum photonic effects
- single photon nonlinear phenomena.

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CURRENTLY DEVELOPING CONFERENCE:
Quantum Materials (OP118)
Conference Chairs, Program Committees and descriptions coming soon.

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Quantum Communications and Quantum Imaging XV (OP413)

Conference Chairs: Ronald E. Meyers, U.S. Army Research Lab. (USA); Yanhua Shih, Univ. of Maryland, Baltimore County (USA); Keith S. Deacon, U.S. Army Research Lab. (USA)

Program Committee: Stefania A. Castelletto, RMIT Univ. (Australia); Milena D’Angelo, Univ. degli Studi di Bari (Italy); Warren P. Grice, Oak Ridge National Lab. (USA); Mark T. Gruneisen, Air Force Research Lab. (USA); Richard J. Hughes, Los Alamos National Lab. (USA); Yoon-Ho Kim, Pohang Univ. of Science and Technology (Korea, Republic of); Todd B. Pittman, Univ. of Maryland, Baltimore County (USA); Barry C. Sanders, Univ. of Calgary (Canada); Alexander V. Sergienko, Boston Univ. (USA); Dmitry V. Strekalov, Jet Propulsion Lab. (USA); Shigeki Takeuchi, Hokkaido Univ. (Japan); Xiao Tang, National Institute of Standards and Technology (USA); Arnold Tunick, U.S. Army Research Lab. (USA)

Quantum communications and quantum imaging are emerging technologies that promise great benefits beyond classical communications and classical imaging - as well as great challenges. The objective of this conference is to provide a forum for scientists, researchers, and system developers in both fields and encourage technology exchange between the quantum communication and quantum imaging research communities. Papers are solicited on the following and related topics:

**QUANTUM COMMUNICATIONS, QUANTUM INTERNET, AND QUANTUM INFORMATION**

- quantum free-space and fiber optics communications and cryptography
  - quantum communications experimental demonstrations
  - quantum key distribution (QKD), entangled QKD, stochastic QKD, heralded QKD
  - quantum cryptography protocols
  - quantum probes
  - quantum communication security
- quantum communication using entanglement
  - teleportation; continuous variable teleportation counter-factual quantum communications
  - Bell-state analyzer development
  - nonlinear crystal and nonlinear fiber use in generating and engineering entanglement
  - multiphoton and multiple-particle entangled states and entangled beams
  - continuous and pulsed laser sources of entangled photons
- fundamental properties of the photon
  - qubit physics
  - single and multi-photon physics
  - squeezed states
  - slow/trapped light and photons
  - amplification and transmission of photon holes
  - quantum wavefunctions
  - quantum probability
  - quantum bi-photon physics
- atmospheric quantum communication, satellite, and technology applications
  - quantum satellites, quantum cube satellites
  - quantum UAV, drone, robot and aircraft research and applications
  - atmospheric effects on quantum communications systems
  - atmospheric quantum communication propagation experiments, theory, simulation
- quantum computing with photons
  - optical/photonic/fiber quantum computing; novel quantum computing
  - photon chips
  - quantum storage, gates, and control
  - single-photon sources
  - quantum algorithms
  - type-II quantum computing theory, hardware, software, and applications
  - fine-grained quantum computing; few-qubit quantum computing
  - quantum state engineering
  - quantum intrusion detection
  - quantum random number generation
  - quantum factoring
- quantum information communication
  - information in a photon
  - quantum data compression
  - compressive sensing and compressive imaging with quantum information
  - nonclassical information from entangled states and non-entangled states
  - non-local measurements
  - quantum secret sharing
- quantum networks
  - atom-photon quantum networks
  - quantum repeaters
  - entanglement of distant quantum memories
  - distributed quantum computing
  - atom chips
  - atom-ion optics; multiphoton interference, multiparticle interference
  - storage of entangled photons
  - photon frequency conversion
  - loop-hole-free quantum teleportation.
CALL FOR PAPERS

QUANTUM IMAGING AND QUANTUM SENSING
- quantum ghost imaging, ghost imaging
  - quantum imaging with entangled photons
  - quantum imaging with thermal light
  - incoherent light and solar light quantum imaging
  - quantum imaging in turbulence and obscurants
  - quantum imaging and satellites
  - color and multispectral quantum imaging
  - quantum imaging at diverse wavelengths
  - quantum imaging and quantum lithography; bi-photon photo resist
  - bi-photon and n-photon quantum imaging
  - quantum holography and quantum identification
  - quantum imaging resolution and superresolution
  - quantum imaging with sparsity constraints
  - quantum imaging noise reduction
  - quantum imaging for medical applications
  - quantum imaging using fluorescence
  - temporal and spatial quantum / ghost imaging
- nonlocal quantum imaging physics
  - quantum versus classical imaging physics
  - quantum imaging versus speckle imaging
  - uncertainty principle in quantum imaging
  - quantum interference; multiphoton interference
  - squeezed states
- quantum remote sensing; quantum sensors; quantum sources
  - quantum two-photon sensing and detection
  - single-photon and multiphoton detectors
  - quantum measurements using cameras
  - fast, sensitive cameras for quantum technology
  - quantum lidar and quantum ladar
  - new ways to make entangled photon and pseudo thermal sources for quantum imaging
  - quantum illumination
- quantum relativity, GPS, and metrology
  - quantum clock synchronization
  - quantum clocks in quantum coincidence measurements.

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VENUE
SPIE Optics + Photonics 2017 will be held at the San Diego Convention Center, 111 West Harbor Dr., San Diego, CA 92101 and at the San Diego Marriott Hotel & Marina located adjacent to the Convention Center at 333 West Harbor Dr.

REGISTRATION
SPIE Optics + Photonics registration will be available April 2017.
All participants, including invited speakers, contributed speakers, session chairs, co-chairs, and committee members, must pay a registration fee. Authors, coauthors, program committee members, and session chairs are accorded a reduced symposium registration fee.
Fee information for conferences, courses, a registration form, and technical and general information will be available on the SPIE website in April 2017.

HOTEL INFORMATION
Opening of the hotel reservation process for SPIE Optics + Photonics is scheduled for April 2017. SPIE will arrange special discounted hotel rates for SPIE conference attendees.
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If government and/or company clearance is required to present and publish your presentation, start the process now to ensure that you receive clearance if your paper is accepted.

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• The contact author will receive notification of acceptance and presentation details by e-mail the week of 3 April 2017.
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IMPORTANT DATES

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