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Technologies

• Liquid Crystals
• Organic and Hybrid Light Emitting Materials and Devices
• Organic, Hybrid, and Perovskite Photovoltaics
• Women in Renewable Energy (WiRE)
• Organic and Hybrid Sensors and Bioelectronics
• Organic and Hybrid Field-Effect Transistors
• Molecular and Nano Machines

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We welcome your participation in the 2019 conference for Organic Photonics + Electronics.

• Join your colleagues, share ideas
• Network with leaders in the field
• See applications of the future
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ABSTRACTS DUE: 30 January 2019
AUTHOR NOTIFICATION: 8 April 2019

The contact author will be notified of acceptance by email.

MANUSCRIPT DUE DATE: 17 July 2019
PLEASE NOTE: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a manuscript for publication in the conference proceedings.

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LIQUID CRYSTALS XXIII (OP211)

Conference Chair: Iam Choon Khoo, The Pennsylvania State Univ. (USA)

Program Committee: Timothy J. Bunning, Air Force Research Lab. (USA); Shaw-Horng Chen, Univ. of Rochester (USA); Jean-Pierre Huignard, Jhoopto (France); Tomiki Ikeda, Chuo Univ. (Japan); Malgosia Kaczmarek, Univ. of Southampton (United Kingdom); Oleg D. Lavrentovich, Kent State Univ. (USA); Sin-Doo Lee, Seoul National Univ. (Korea, Republic of); Tsung-Hsien Lin, National Sun Yat-Sen Univ. (Taiwan); Francesco Simoni, Univ. Politecnica delle Marche (Italy); Nelson V. Tabiryan, BEAM Engineering For Advanced Measurements Co. (USA); David M. Walba, Univ. of Colorado at Boulder (USA); Shin-Tson Wu, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

Liquid crystals in their various mesophases are technologically important electro-optic materials, as they possess many unique and useful physical and optical properties. They are now widely used in various optoelectronic display, beam/image, and optical information processing systems. Liquid crystals also possess extraordinarily large nonlinear optical responses, which are now finding an ever increasing usage in practical devices and systems ranging in response times from femtoseconds to milliseconds, covering a wide spectral range from near UV to infra-red. In recent years, innovation in nanofabrication and development of plasmonic nanostructures have also led to the emergence of liquid crystalline metamaterials that possess new and unique functionalities and properties that hold high promises for applications in advanced optical and photonic devices/systems.

This conference provides a forum for presentations of research results on all aspects of liquid crystal material and optical sciences and technologies. The emphasis is on new, novel, or unique liquid crystalline materials, optical properties and phenomena, and their applications in display, information, and image processing systems, electro-optics and nonlinear optics.

Papers are solicited from the following and related topics:

- new liquid crystalline materials, soft matters and complex fluids, possessing large and broadband birefringence, ferroelectricity, chirality and other characteristics suitable for advanced electro-optical applications
- new optical and electro-optical processes and phenomena of fundamental or applied significance
- advance LC display science and technologies, optical alignment, holography, storage, and switching materials, processes, and devices
- liquid crystal incorporating nano-particulate and nanostructures; tunable plasmonic or metamaterials
- nonlinear optics: materials, phenomena, and applications
- bio-photonics and sensor, ultrafast pulse modulations, beam and phase front manipulations.

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ORGANIC AND HYBRID LIGHT EMITTING MATERIALS AND DEVICES XXIII (OP212)

Conference Chairs: Chihaya Adachi, Kyushu Univ. (Japan); Jang-Joo Kim, Seoul National Univ. (Korea, Republic of); Franky So, North Carolina State Univ. (USA)

Program Committee: Wolfgang Brütting, Univ. Augsburg (Germany); Malte C. Gather, Univ. of St. Andrews (United Kingdom); Hironori Kaji, Kyoto Univ. (Japan); Ji-Seon Kim, Imperial College London (United Kingdom); Tae-Woo Lee, Seoul National Univ. (Korea, Republic of); Jian Li, Arizona State Univ. (USA); Dongge Ma, South China Univ. of Technology (China); Andrew P. Monkman, Durham Univ. (United Kingdom); Jongwook Park, Kyung Hee Univ. (Korea, Republic of); Yong-Jin Pu, RIKEN Ctr. for Emergent Matter Science (Japan); Barry P. Rand, Princeton Univ. (USA); Sebastian Reineke, TU Dresden (Germany); Ior D. W. Samuel, Univ. of St. Andrews (United Kingdom); Joseph Shinar, Iowa State Univ. of Science and Technology (USA); Ken-Tsung Wong, National Taiwan Univ. (Taiwan); Chung-Chih Wu, National Taiwan Univ. (Taiwan); Seunghyup Yoo, KAIST (Korea, Republic of)

This conference centers on the science and technology of organic and hybrid light emitting materials and devices for flat panel displays, solid state lighting and lasers. Applications range from handheld displays to large flat panel screens, large-area distributed light sources, and next-generation organic lasers.

The scope of the conference will cover the following areas:
• highly efficient molecular and polymeric light emitters and devices
• thermally activated delayed fluorescent materials
• 2D and 3D metal-organic perovskites light emitting materials
• quantum dot light emitting materials and devices
• efficient white emitting materials and devices for solid state lighting
• novel light extraction schemes
• microcavity effects for solid state lighting and lasers
• organic laser materials and devices
• device failure mechanisms and durability studies
• novel approaches, patterning, and driving schemes for full color displays and solid state lighting
• novel substrates and electrodes for flexible devices
• physics of carrier injection, transport, and recombination
• photophysics of excited state.

HIGHLIGHTS:
• Special Session on Solid State Lasers based on Organic Thin Films, Molecular, and Photonic Crystals.

MANUSCRIPTS FOR THE CONFERENCE PROCEEDINGS WILL BE PEER-REVIEWED.

Authors are invited to submit an original manuscript to the Journal of Photonics for Energy, which is now covered by all major indexes and Journal Citation Reports.

Save the date

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The SPIE Conference on Organic, Hybrid, and Perovskite Photovoltaics will celebrate its 20th anniversary in 2019. Over the past 20 years, this conference provided an important international forum for researchers to share new and exciting ideas and discuss key trends in these areas of renewable energy research including hot topics in the field of new generation solar cells. The aim of this meeting is to bring together scientists, engineers, and technologists from multiple disciplines to report on and discuss the fundamental issues that affect device operation, including efficiency and long term stability. The theme of the conference will be “state-of-the-art” performance of organic, hybrid and perovskite solar cells and their applications in future technologies. The scope of the conference includes novel materials for light-harvesting and carrier transport, highly efficient and stable organic, hybrid and perovskite solar cells, and device physics including interfaces, morphology, and carrier transport. The conference will also cover new techniques for fabrication, encapsulation, and printing of solar cells on large-area flexible substrates. The conference will feature at least one joint session on the photophysics of carrier generation with the Conference on Physical Chemistry of Semiconductor Materials and Interfaces.

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

- molecular, macromolecular, and polymer photovoltaics
- hybrid organic/inorganic photovoltaics
- perovskite-based solar cells
- quantum dot-based solar cells
- tandem and multi-absorber solar cells
- plasmonic and photonic structures for light management
- new light-harvesting materials, including low and wide band gap for tandem architectures
- new electron and hole transport materials
- new electrode materials
- new flexible substrate materials
- novel contacts and nanostructured layers
- novel metal oxides and oxide/organic interfaces for stable solar cells
- defect engineering for improved efficiency and stability
- film structure and morphology
- organic/inorganic interfaces
- physics of exciton diffusion, charge carrier generation, transport, and recombination
- new techniques for fabrication, encapsulation, and printing of solar cells
- large-area processing and fabrication of solar modules
- novel materials for green processes, e.g., lead-free perovskites, green solvents
- stability, lifetime, and reliability of materials, solar cells and modules
- low dimensional, 2D and 2D/3D halide perovskite absorbers
- future prospects for organic, hybrid, and perovskites solar cell technology.
ORGANIC AND HYBRID SENSORS AND BIOELECTRONICS XII (OP214)

Conference Chairs: Ioannis Kymissis, Columbia Univ. (USA); Emil J. W. List-Kratochvil, Humboldt-Univ. zu Berlin (Germany); Ruth Shinar, Iowa State Univ. of Science and Technology (USA)

Program Committee: Magnus Berggren, Linköping Univ. (Sweden); Annalisa Bonfiglio, Univ. degli Studi di Cagliari (Italy); Alon Gorodetsky, Univ. of California, Irvine (USA); George G. Malliaras, Univ. of Cambridge (United Kingdom); Paul Meredith, Swansea Univ. (United Kingdom); Röisin M. Owens, Univ. of Cambridge (United Kingdom); Rosaria Rinaldi, Univ. del Salento (Italy); Ifor D. W. Samuel, Univ. of St. Andrews (United Kingdom); Franky So, North Carolina State Univ. (USA); Luisa Torsi, Univ. degli Studi di Bari Aldo Moro (Italy)

The need for small-size and on-chip integratable and inexpensive detecting systems, including for biological and medical applications, has prompted the development of easily processable organic field-effect transistor (OFET)- and light-emitting diode (OLED)-based sensors integrated with organic or hybrid photodetectors. Moreover, the growing activity and progress in flexible, organic, printable, and hybrid electronics enable the development of skin display electronics, as well as flexible wearable and implantable sensors. A better understanding of the organic/living tissue interface, however, which will lead to the design of better biosensor concepts, remains a challenge. Overall, fast and simultaneous detection of multiple analytes utilizing micro/nano array systems continues to open a plethora of novel applications in key areas such as clinical analysis, environment monitoring, food and beverage safety, and homeland security. Solution or easily processable two-dimensional metal oxides, carbon-based, and hybrid organic/inorganic 2D and 3D materials have proven useful as active layers in chemical and biological transducers. Novel technological approaches that allow the integration of functional bio-receptors into device structures are also critically important to endow such devices with recognition capabilities. Continued research and development efforts are needed, including with newly emerging technologies on hybrid memory devices and logic elements to further improve sensors’ performance level, demonstrate integrated sensor systems, and advance low cost manufacturability.

This conference will focus on progress in chemical, biological, medical, and physical sensors and actuators, including image sensors and flexible/stretchable e-skin, and large-scale devices from carbon-based, solution processable metal-oxides, and hybrid organic/inorganic materials. Devices such as organic- and perovskite-based photodetectors and organic bioelectronic devices, including neural interfaces, diagnostics, drug delivery devices, and tissue engineering concepts using electrical activation/control of cells will be discussed. Next generation integrated sensor systems for soft robotics and bioinspired neuromorphic devices will be addressed showing combinations of memory and logic devices based on organic and hybrid materials with various sensor devices. To stimulate the overarching topic of low cost fabrication, device fabrication and integration issues using novel printing and structuring methods will be emphasized.

Contributions related (but not limited) to the following topics are solicited:

- organic or hybrid materials for sensor applications including carbon-based nanomaterials, graphene, carbon nano-dots, transition metal dichalcogenides, solution processable ZnO and other metal oxides, as well as organic semiconductors and perovskites (synthesis, characterization, and optimization) for sensor applications
- organic and hybrid transistors for chemo-, biosensing, and bioelectronic applications
- bioinspired systems for biotechnology and medical applications
- OLEDs, organic light emitting transistors (OLETs), and organic semiconductor lasers for chemical and biological analytical applications
- multicolor-unable OLED arrays for absorption measurements in analytical applications
- organic electronics in medical treatment for pain relief and luminescent conjugated polymers in disease detection
- organic semiconductors in plasmon-based sensors
- organic biocompatible materials in applications such as cell growth, tissue engineering, and drug delivery
- flexible electronics for the manufacturing of large-area sensors and actuators, conformable and stretchable electronics for sensing applications, including wearable and e-skin devices
- array technologies in organic electronics: microfluidics, nanoscale, and lab-on-a-chip for multiple analyte detection
- Organic and hybrid materials-based memory and logic devices and neuromorphic concepts
- integrated bioinspired systems combining sensors, memories and logic elements
- hybrid heterogeneous integration of printed sensor circuits with conventional Si-electronics, including RFID applications.
- large-area and high resolution S2S and R2R fabrication techniques.

HIGHLIGHTS:
A joint session with the conference on Organic Thin Film Transistors (OTFTs)
The impressive improvement in the performance of organic thin film field-effect transistors (OTFTs) during the last two decades, coupled with the processability advantages offered by organic materials, has attracted the interest of the optoelectronics industry and has opened the way for practical, broad-impact applications of such devices. OTFTs are based on various small organic molecules, conjugated polymers and oligomers, blends of such materials, or organic-inorganic hybrids. Potential applications for organic semiconductors are currently aimed at large-area electronics, which almost always involve intermolecular transport mechanisms. They include flexible active-matrix displays with OTFT backplanes, e-paper, low-cost and low-end printable electronic circuits, devices such as RFID tags and smart cards, and sensors. Knowledge accumulated from the study of these organic materials and devices will in the future aid the design, development, and fabrication of molecular and polymeric devices based on intramolecular transport. This year we will expand from organic transistors to other emerging thin-film transistor technologies, which include oxide, carbon nanotubes (CNTs), hybrid organic/inorganic perovskites, and 2D materials.

This conference is intended to provide a platform for discussions and exchanges between scientists with different backgrounds, all experts in the field of organic and organic/inorganic hybrid transistors in an effort to assess the state-of-the-art in this field of research and reflect on the predominant vision(s) for the future of thin-film transistor technologies.

The scope of the conference will cover research topics spanning from basic chemistry and physics of organic and hybrid semiconductors to their applications in electronic devices and circuits. Contributed papers are solicited concerning, but not limited to, the following areas:

- organic semiconductor design, synthesis, processing, and characterization
- organic semiconductor growth and morphology
- dielectric materials
- oxide, perovskites, CNTs, 2D semiconductors
- printable electronic materials
- printing and patterning methods
- device physics, modeling, geometric design, and characterization
- amorphous TFTs
- transparent electronics
- resistive memories and memristor devices
- single-crystal devices
- charge injection and transport properties
- integrated circuits
- neuromorphic concepts and applications
- chemical and biological sensors
- flexible OTFT display backplanes
- other OTFT applications
- device reliability, stability, and degradation
- self-assembly processes in OTFTs
- molecular devices
- integration of OTFTs with other components
- organic light emitting transistors
- memory devices
- stretchable electronic materials and devices
- plastic electronics
- fundamental processes in OTFTs

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MOLECULAR AND NANO MACHINES II
(OP216)

Conference Chair: Zouheir Sekkat, Univ. Mohamed V (Morocco), MAScIR (Morocco)
Conference Co-Chair: Takashi Omatsu, Chiba Univ. (Japan)
Program Committee: Christopher J. Barrett, McGill Univ. (Canada); Manfred Eich, Technische Univ. Hamburg-Harburg (Germany); Hicham Fenniri, Northeastern Univ. (USA); Tigran Galstian, Ctr. d’Optique, photonique et laser (Canada); Shinji Hayashi, Kobe Univ. (Japan); Masahiro Irie, Rikkyo Univ. (Japan); Hidekazu Ishitobi, Osaka Univ. (Japan); Peter Karageorgiev, Univ. Regensburg (Germany); Satoshi Kawata, Osaka Univ. (Japan); Kwang-Sup Lee, Hannam Univ. (Korea, Republic of); Keitaro Nakatani, École normale supérieure Paris-Saclay (France); Jean-Michel Nunzi, Queen’s Univ. (Canada); Atsushi Shishido, Tokyo Institute of Technology (Japan); Hong-Bo Sun, Tsinghua Univ. (China); Naoto Tsutsumi, Kyoto Institute of Technology (Japan)

Machines have been influencing human development over many millennia, in particular since the industrial revolution, with key discoveries that dramatically changed the world, and mankind has been pushing the limits of machines work and miniaturizing machines, with the ultimate goal of making molecular-sized machines that can perform complex and useful tasks. We are now at the dawn of a new revolution. Even though the field is still in its infancy, scientists for many years have been intrigued by this multidisciplinary research area, including biology and chemistry and physics. Innovative applications of molecular machines, as can be foreseen now, include actuation, energy, memory and sensing. The basic focus of this conference is the study of molecular machines and their response to external stimulus, by light for example, and the macroscopic motion they impart in materials.

Session topics include, but are not limited to:
• functional micro/nano machines
• molecular rectifiers and transistors
• nanoparticle probes and spectroscopies for molecular machinery
• synthetic and bio-molecular machines
• DNA-based nano-machines
• electrochemically, pH, thermally, and photochemically driven molecular motion
• molecular shuttles, cars, and lifts
• molecular contraction/extension, and artificial muscles
• optically driven molecular motors and devices
• molecular switches and memories
• optical data storage
• photochromic molecules and systems
• light-fueled molecules and systems

• molecular actuators
• photo-robotics
• photochemical and optical tweezing
• optical manipulation and structuring of materials
• materials opto-mechanics
• photoactive soft matter
• photoresponsive liquid-crystalline materials
• photo-softening and photo-deforming materials
• two-photon micro/nanofabrication of functional materials and systems
• microfluidics and (bio)sensing.

Save the date

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ORGANIC PHOTONICS + ELECTRONICS

WOMEN IN RENEWABLE ENERGY (WIRE) (OP600)

Conference Chairs: Monica Lira-Cantu, Catalan Institute of Nanoscience and Nanotechnology (Spain); Zakya H. Kafafi, Lehigh Univ. (USA)

Preliminary List of Invited Speakers

• Judith Driscoll, Cambridge Univ.
• Rachel Goldman, Univ. of Michigan
• Sarah Kurtz, Univ. of California at Merced
• Jenny Nelson, Imperial College
• Thuc-Quyen Nguyen, Univ. of California at Santa Barbara
• Debra Rolison, US Naval Research Lab.
• Natalie Stingelin, Georgia Institute of Technology

The aim of the SPIE Conference on Women in Renewable Energy (WiRE) is to bring together women scientists and engineers from around the world to report and discuss key trends in renewable energy research, research that will soon transform the future utilization of energy by our society. The theme of the conference will be renewable energy, its transformative future global utilization, and applications in enabling technologies. The scope of the conference will include novel materials, devices and architectures for renewable energy. At the end of this one day conference, a round table with a group of panelists will discuss the role that female leadership has played in scientific research, education and innovation, especially in the field of renewable energy.

The scope of the conference will cover, but is not limited to, the following areas:

• conversion of solar light into electricity
• conversion of solar light into thermal energy
• conversion of solar light into chemical energy and fuel generation
• energy storage including batteries and capacitors
• fuel cells, ferroic materials (piezo, ferro, flexo)
• thermoelectrics - materials, methods, and devices
• novel applications (e.g., self-powered devices for wearables and sensors).

ROUND TABLE TOPICS

• benefits of female leadership
• women role models
• balance between male and female responses to challenges and risks
• making scientific research an inclusive world
• male networking versus female solo-working
• the role of education and importance of leaning
• mentoring and career development.

To complement the conference, SPIE’s Journal of Photonics for Energy will have an open access special section titled “Women in Renewable Energy (WIRE).” All manuscripts submitted for this special issue will undergo the regular peer review process. SPIE will waive the open access publication fees for all accepted papers in this special section.
GENERAL INFORMATION

VENUE
SPIE Optics + Photonics 2019 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., San Diego.

REGISTRATION
SPIE Optics + Photonics registration will be available April 2019.

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 2019.

HOTEL INFORMATION
Opening of the hotel reservation process for SPIE Optics + Photonics is scheduled for April 2019. SPIE will arrange special discounted hotel rates for SPIE conference attendees.

The website will be kept current with any updates.

STUDENT TRAVEL GRANTS
A limited amount of contingency student travel grants will be awarded based on need. Grant applications can be found in the Student Member area of www.SPIE.org, under the Student Author Travel Grants section. Applications will be accepted from 8 April 2019 to 8 May 2019. Eligible applicants must present an accepted paper at this meeting. Offer applies to undergraduate/graduate students who are enrolled full time and have not yet received their PhD.

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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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Find important requirements for visiting the United States on the SPIE Optics + Photonics website. There are steps that ALL visitors to the United States need to follow.

Online at: www.spie.org/visa

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- Please submit a 250-word text abstract for technical review purposes that is suitable for publication. SPIE is authorized to circulate your abstract to conference committee members for review and selection purposes.
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- Only original material should be submitted.
- Abstracts should contain enough detail to clearly convey the approach and the results of the research.
- Commercial papers, papers with no new research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation in this conference.
- Please do not submit the same, or similar, abstracts to multiple conferences.

REVIEW, NOTIFICATION, AND PROGRAM PLACEMENT INFORMATION

- To ensure a high-quality conference, all submissions will be assessed by the Conference Chair/Editor for technical merit and suitability of content.
- Conference Chair/Editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations.
- The contact author will receive notification of acceptance and presentation details by e-mail no later than 8 April 2019.
- Final placement in an oral or poster session is subject to the Chairs’ discretion.

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Critical Dates

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Plan to participate by sharing your latest research in the areas of nanoscience and engineering, organic photonics, optical engineering application, and astronomical instrumentation.

**Conference and Courses:** 11–15 August 2019 · San Diego, California

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<th>Optical Engineering + Applications</th>
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<tr>
<td>Nanotechnology is creating applications in such diverse fields as energy, medicine, information storage, and computing. Prepare to present in metamaterials, nanophotonic materials, plasmonics, quantum science and technology, nanomedicine, optical trapping, nanostructured thin films, spintronics, nanostructured devices, nanoeengineering, nanoimaging, nanospectroscopy, and low-dimensional materials.</td>
<td>This is a comprehensive conference on organic-based materials and devices that advances renewable energy sources and other commercial applications and include OLEDs, OFETS, OHPVs, perovskite PVs, organic and hybrid sensors, bioelectronics, liquid crystals, and molecular machines.</td>
<td>The premier conference for the latest developments in optical design and engineering, including photonic devices and applications, x-ray, gamma-ray, and particle technologies, image and signal processing, astronomical optics and instrumentation, optics and photonics for sustainable energy, remote sensing, and space optical systems.</td>
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13–15 August 2019

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