



25th Anniversary  
of the European Optical Society  
Ευρωπαϊκή Οπτική Σύνοδος  
25η Γενέθλια

# EOSAM 2016

European Optical Society Bi-Annual Meeting 2016



## CALL FOR PAPERS

**26 - 30 September 2016**  
Adlershof con. vent. Exhibition Centre  
Berlin, Germany

Submit Abstracts by  
**30 April 2016**  
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**Local Scientific Chair:**

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Berliner Glas KGaA (DE)

## Topical Meetings:

- TOM 1 - Silicon Photonics and Guided-Wave Optics
- TOM 2 - Freeform Optics **NEW!**
- TOM 3 - Optical System Design and Tolerancing
- TOM 4 - Diffractive Optics
- TOM 5 - Trends in Resonant Nanophotonics
- TOM 6 - Frontiers in Optical Metrology
- TOM 7 - Organic & Hybrid Semiconductor Materials and Devices
- TOM 8 - Adaptive Optics and Advanced Illumination Imaging

Tutorials on TOM topics

INDUSTRIAL EXHIBITION

Grand Challenges of Photonics Session

EU project result dissemination Session

EOS Annual General Assembly

Fellows ceremony

Award ceremonies



**TOM 1 - Silicon Photonics and Guided-Wave Optics****Chairs**

Graham Reed, University of Southampton (UK)

Antti Säynätjoki, Aalto University and University of Eastern Finland (FI)

Seppo Honkanen, Microsoft (FI)

**Synopsis**

The focus of this topical meeting is to explore new trends and applications, particularly, in the field of Silicon Photonics, but also in Guided-Wave Optics and related areas in general. The applications range from devices for data center applications to biosensing. New developments on fiber and planar waveguide lasers, fiber non-linearities, nanophotonics materials and devices will be discussed.

**Topics include**

Design, simulation, modeling and fabrication of optical interconnects

(All) optical (on chip) routing architectures and technologies

Related design concepts for high speed, low power photonic integrated circuits (PICs)

(CMOS-compatible) optical sources and detectors

Optimization of light emission

Absorption for data processing using materials such as SiGe or III/IVs

Advanced monolithic and hybrid processing techniques for the fabrication of photonic structures

Devices and strategies for the advancement of PICs in silicon and other materials (including advances in testing and packaging )

**TOM 2 - Freeform Optics NEW!****Chair**

Kristina Uhlendorf, Sypro Optics GmbH (DE)

**Synopsis**

The focus of this topical meeting will be to explore and discuss new trends and developments within the fast evolving field of optical systems based on freeform optical surfaces as major component. Freeform optical components refractive as well as reflective offer great chances to realize non- or low-symmetry optical systems with new functionalities, high optical performance or reduced complexity. On the other side the manufacturing, characterization, assembly and optical testing of such systems is especially for imaging systems still challenging. The topical meeting will address how new tools and technologies in design and manufacturing are enabling next generation freeform optical systems.

**Topics include**

Optical system design of imaging and non-imaging systems

Aberration theory, system simulation and surface representation

Tolerancing, alignment and assembly strategies

Manufacturing

Metrology

## **TOM 3 - Optical System Design and Tolerancing**

### **Chairs**

Wilhelm Ulrich, Carl Zeiss AG (DE)  
Kimio Tatsuno, Koga Research Institute Inc. (JP)  
Oliver Föhnle, Delft University of Technology (NL)

### **Synopsis**

The goal of this topical meeting is to give an overview about future trends and what is going on in optical and optomechanical system design, both for imaging systems as well as for non-imaging systems. TOM3 will show how upcoming technologies enable innovative optical designs for new applications. The challenges of cost-effective manufacturability and testing methods will be discussed, based on a smart tolerancing process and well-adapted alignment strategies.

### **Topics include**

Optical & optomechanical system design  
Tolerances  
Error budgeting  
Technological and manufacturing aspects  
Alignment strategies  
Digital correction means  
Cost considerations  
Standardization  
Including both imaging and non-imaging optics (with applications in lighting)

## **TOM 4 - Diffractive Optics**

### **Chairs**

Paul Urbach, Delft University of Technology (NL)  
Jesús Lancis Sáez, Universitat Jaume (ES)

### **Synopsis**

Topical meetings in Diffractive Optics in this series have been organized on nine occasions before, in most cases under the auspices of EOS (Savonlinna 1997, Jena 1999, Budapest 2001, Oxford 2003, Warsaw 2005, Barcelona 2007, Koli 2010, Delft 2012, Berlin 2014). In 2014, Diffractive Optics was added as a new TOM within EOSAM. The conference was a success and, thus, it was decided that Diffractive Optics would once again be part of the bi-annual meeting of the EOS. Contributions are solicited on all areas of Diffractive Optics and all application fields are concerned, including life sciences, sensing, solid state lighting, and solar photonics.

### **Topics include**

Modelling of diffractive optics  
Diffractive optics and polarization  
Scattering by diffractive optical elements  
Inverse problems in diffraction optics  
Fabrication and characterisation, measurement and inspection  
Adaptive and switchable diffractive optics  
New materials for diffractive optics including metamaterials

## TOM 5 - Trends in Resonant Nanophotonics

### Chairs

Riad Haidar, ONERA (FR)

Nicolas Bonod, Institut Fresnel (FR)

Femius Koenderink, ICFO (ES)

### Synopsis

Nanophotonics aims at controlling light at nanometer scales. The design of nanostructures that can resonantly interact with light is of crucial importance to enhance light-matter interactions and to control field distributions at subwavelength scales. These novel nanostructures offer technical and technological solutions with high innovation potential. The TOM 5 will address both fundamental and application aspects of resonant photonics. Topics will cover quantum nano-optics, bio- and chemo-sensing, non-linear optics, metamaterials, optical trapping, new plasmonic materials, theory and modal analysis, among others.

### Topics include

Quantum nano-optics & optical antennas

Nanophotonics for bio- and chemo-sensing applications

Active and tunable optical metamaterials

Nonlinear optics in nanostructures and metamaterials

Meta-surfaces & applications

New plasmonic materials

Nanomanipulation with light, optical trapping

Nanophotonics for energy applications

Nonreciprocity, and time-modulated nanophotonic materials

Transport in quasiperiodic and random photonic systems

Theory and modelling for nanophotonics and metamaterials

Topological photonics

## TOM 6 - Frontiers in Optical Metrology

### Chairs

Ralf B. Bergmann, BIAS (DE)

Omar El Gawhary, VSL – Dutch Metrology Institute (NL)

### Synopsis

This Topical Meeting is designed as a forum for application-oriented basic and applied optical metrology techniques. This includes basic methods, fundamental limits, measurement techniques and their applications, foundations of applied metrology as well as future trends and topics. As optical metrology methods are generally non-contact, non-destructive, fast, reliable, have a high precision and certain methods are suitable for rugged environments, optical metrology lends itself very much to industrial applications such as process development, in-line process control (e.g. roll-to-roll), and (in-process) quality control. However, since industrial demands are sometimes very specific and of course ever increasing, there is a continuous requirement for more ruggedness, higher resolution, faster measurement and evaluation to name only a few constraints. This situation not only calls for evolutionary improvement, but also asks for new ideas or even revolutionary breakthroughs. Besides developing new methods and paradigms, also rigorous modeling and simulations deserve due attention, especially in the emerging fields of hybrid and holistic metrology. Finally, an assessment on the absolute performance in terms of resolution and measurement uncertainty stresses the role of traceability to internationally recognized primary metrology standards. These, in turn, translate into calibration efforts to obtain metrically valid and consistent results. EOSAM is an excellent opportunity not only to focus on the frontiers of optical metrology, but also to interact with many international experts on neighboring topics, such as Optical System Design, Biophotonics, Metamaterials or Diffractive Optics.

### Topics include

Interferometric techniques (Digital Holography, Shearing Interferometry, White-Light Interferometry etc.)  
Non-interferometric techniques (Geometrical optics e.g. Fringe Projection, Structured Light, Deflectometry)  
High precision metrology of large objects (3D imaging, 3D shape)  
Microscopy (2D and 3D-imaging, Optical Tomography, Quantitative Phase Imaging, non-interferometric phase sensitive microscopy, phase retrieval, high speed microscopy, microscopy in flows, etc.)  
Microscopy and imaging, high-NA systems, vectorial imaging, resolution-enhancement (superlensing, magneto-optics, plasmonics, field engineering, quantum-enhanced measurements)  
Computational photonics for metrology and rigorous electromagnetic simulations (Computational Shear Interferometry, image processing, scattering and diffraction problems)  
Non-imaging techniques (optical scatterometry, ellipsometry, Mueller-polarimetry)  
Non-destructive testing with optical methods (Inspection, monitoring, displacement, deformation, defect detection, aberration measurement)  
Measurement uncertainty, calibration and standards (Primary and transfer standards in nano-metrology, uncertainty budgeting)  
In-process measurement (3D- and 4D-Metrology, high speed techniques, defect detection)

### TOM 7 - Organic & Hybrid Semiconductor Materials and Devices

#### Chairs

David Lidzey, University of Sheffield (GB)  
Guglielmo Lanzani, Istituto Italiano di Tecnologia (IT)  
Davide Comoretto, University of Genova (IT)

#### Synopsis

Many organic semiconductor materials are able to absorb or emit light with high-efficiency, providing the foundation for applications in technologies ranging from optical communication devices to energy harvesting and storage. By combining organic and inorganic materials together, so-called hybrid systems can also be created that possess properties not achievable in either material system alone. For example, organometal halide perovskites are now of significant interest as materials for photovoltaics and lasers. This topical meeting aims to bring together the community of physicists, chemists, material scientists and engineers having an interest in the application in photonics and light-harvesting, in order to provide an overview of the state of the art and a vision for future technologies. Our session considers fundamental theory, basic spectroscopy and device studies. We aim to cover a broad range of topics, including organic lasers and laser devices, perovskite photovoltaics and lasers, organic light emitting diodes and photovoltaic devices, biologically inspired photonics and devices, nano-photonics materials and systems, microcavities and polariton-based optics, photonic-crystals and self-assembled photonic structures, and spectroscopy of organic and hybrid semiconductors.

#### Topics include

Spectroscopy of functional organic and hybrid-semiconductor materials  
Photovoltaics and photodetectors based on organic-semiconductors and perovskites  
Lifetime, stability and manufacture-techniques for emerging photovoltaic devices  
Lasing and amplification in organic and perovskite materials  
Polaritons in strong-coupled organic and hybrid-semiconductor microcavities  
Photonic crystals and self-assembled photonic structures  
Biologically-inspired photonics  
Organic light emitting diodes and light emitting transistors  
Light-sources for optical communications  
Sensor devices based on organic and hybrid semiconductor materials  
Theory of optical and electronic excitations  
Synthesis and design of new materials for photonics

## TOM 8 - Adaptive Optics and Advanced Illumination Imaging

### Chairs

Joerg Petschulat, Carl Zeiss AG (DE)  
Allard Mosk, University of Utrecht (NL)

### Synopsis

Advanced microscopy methods rely increasingly on adaptive compensation of aberrations and on advanced illumination to increase resolution and reduce the effects of scattering. In this topical meeting we bring together experts from different fields in the fundamentals as well as in application of adaptive optics and advanced illumination. Such applications are found in microscopy, beam-shaping, imaging in scattering media, metrology, medical applications and astronomy. Special emphasis will be put on the enabling technologies for such applications. Thus, novel adaptive optical elements, algorithms, sensors and illumination methods are within the scope of this TOM. Furthermore, we aim to bring together researchers from universities and institutes with industrial representatives fabricating advanced optical equipment for adaptive optics and adaptive illumination, thus addressing the whole range of fundamental research, applied optics and system development.

### Topics include

Adaptive Optics  
Optical phase conjugation  
Computational adaptive optics  
Image reconstruction  
Ptychography / coherent diffraction imaging  
Angular illumination and detection methods  
Illumination with shaped wavefronts

## EOSAM SPECIAL EVENTS

TUTORIALS ON TOM TOPICS

INDUSTRIAL EXHIBITION

Wednesday, 28 September - Thursday, 29 September

Book your exhibition space today: [eosam2016@myeos.org](mailto:eosam2016@myeos.org)

GRAND CHALLENGES OF PHOTONICS SESSION

For the fifth time, a special session of EOSAM is dedicated to the "Grand Challenges of Photonics". In this session world-class speakers are going to talk about technologies which are revolutionary, uncommon and not realizable to date, but can pave the way for an even brighter future in optics and photonics.

EU PROJECT RESULT DISSEMINATION SESSION

Partners in EU projects are invited to present their results in this special session.

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## ABSTRACT SUBMISSION

Submit to: [www.conftool.com/eosam2016](http://www.conftool.com/eosam2016)

Deadline for abstract submission: 30 April 2016

Notification to authors: 15 June 2016

Abstracts can only be submitted online via Conftool: [www.conftool.com/eosam2016](http://www.conftool.com/eosam2016)

Authors are requested to submit an extended abstract of two pages with at least one figure. The abstract must be formatted according to the EOS abstract guidelines, which can be downloaded at

[www.myeos.org/events/eosam2016](http://www.myeos.org/events/eosam2016).

Contributions will be accepted for oral and poster presentations (please indicate your preference). At least one author is requested to register for the meeting separately from the abstract submission. The registration includes admission to all Topical Meetings, sessions and additional program.

## JOURNAL PAPERS IN JEOS:RP

Presenters at an EOS Topical Meeting are kindly invited to consider the submission of a manuscript about their research to the EOS open-access on-line journal JEOS: RP (Journal of the European Optical Society, Rapid Publications, [www.jeos.org](http://www.jeos.org)). A 20% discount will be applied to the author fee. JEOS:RP publishes articles about recent scientific research and technological innovation as well as review papers about a topic in science or innovation from the recent past. A contribution should be original and will be subjected to the journal's standard anonymous peer review process for scientific quality. The average time-to-publication of the journal is of the order of 75 days.

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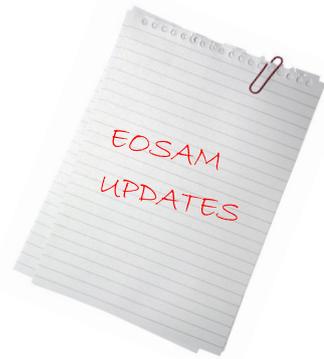
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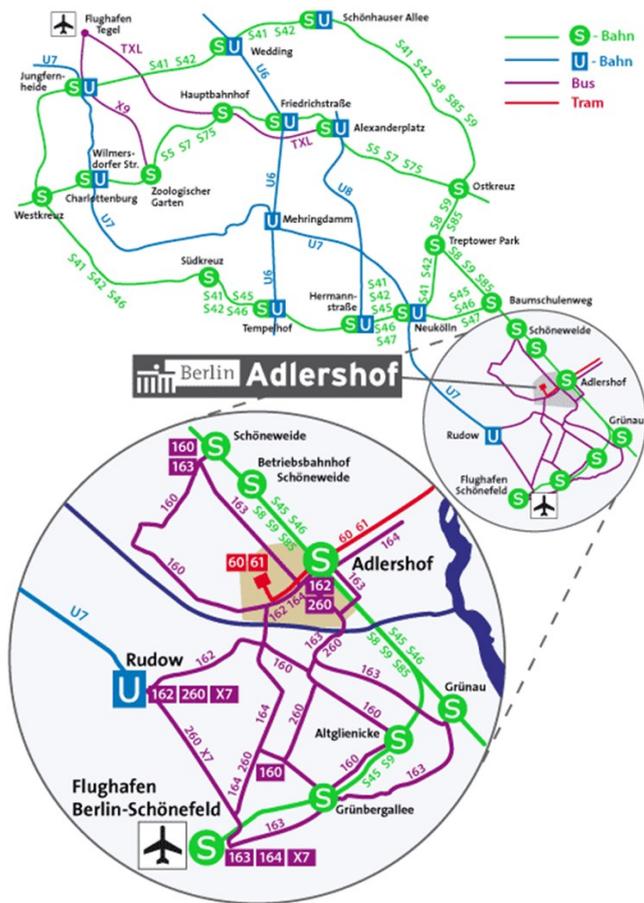
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**Getting to Adlershof..**

By public transport it takes

10 min from Schönefeld

30 min from Alexanderplatz

40 min from central train station Hauptbahnhof

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Contact the EOS Office to learn more about the accommodation:

[eosam2016@myeos.org](mailto:eosam2016@myeos.org)

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