



# Photonics and Fiber Technology Congress

5 – 8 September 2016  
SMC Conference & Function Centre  
Sydney, Australia

[osa.org/FiberandPhotonicsOPC](http://osa.org/FiberandPhotonicsOPC)

## TOPICAL MEETINGS

Australian Conference on Optical Fibre Technology

Bragg Gratings, Photosensitivity and Poling  
in Glass Waveguides

Nonlinear Photonics

**Benjamin J. Eggleton**, *University of Sydney,  
Australia, Congress Chair*

Abstracts Deadline: 3 May 2016

Advance Registration: 8 August 2016

The **OSA Photonics and Fiber Technology Congress** covers multiple aspects of the latest results in the fields of data transfer and optical effects in guided wave optics and materials. Glasses play a central role in photonics; papers will be presented that cover many physical phenomena in glasses including the fundamentals of photosensitivity, glass relaxation and poling, the fabrication and properties of grating structures, and the numerous applications that these glasses are being applied to.

This Congress also covers numerous advances in integrated photonics and fiber optics including the development of integrated photonic circuits, 3-D photonics, active and passive waveguides as well as the application of these technologies to data centers and optical networks. The new areas in fiber sensing and mid-infrared guided wave optics will also be reported on.

Finally, a comprehensive group of presentations will cover both fundamental and applied nonlinear photonics including nonlinear effects in fibers and planar waveguide structures, many aspects of soliton physics, nonlinear frequency conversion in waveguides, quantum effects, and the effects of nonlinearities in photonics devices and networks as impairments or as a means to regenerate, modify or switch signals. Discussions will also cover novel nonlinear materials and structures used to enhance or mitigate nonlinear effects in guided wave structures.

The Congress is comprised of three Topical Meetings:

- Australian Conference on Optical Fibre Technology (ACOFT)
- Bragg Gratings, Photosensitivity and Poling in Glass Waveguides (BGPP)
- Nonlinear Photonics (NP)

### CHAIR

**Benjamin J. Eggleton**, *University of Sydney, Australia, Congress Chair*

## Australian Conference on Optical Fiber Technology (ACOFT)

ACOFT addresses all aspects of guided wave optics including the theory, materials, technologies and applications associated with waveguide devices and integrated photonics. The meeting covers new developments and innovation in the fields of optical fiber and waveguide devices.

Key topics include guided wave physics; advances in optical fiber technology; planar and integrated photonics; optical communication, network systems and data centers; mid-infrared guided wave optics; and sensing and novel applications.

### CHAIRS

**Michael Withford**, *Macquarie University, Australia*, General Chair

**Stuart Jackson**, *Macquarie University, Australia*, Program Chair

Review the list of topic categories at [osa.org/ACOFT](http://osa.org/ACOFT).

## Bragg Gratings, Photosensitivity and Poling in Glass Waveguides (BGPP)

BGPP addresses all aspects of grating structures, photosensitivity, glass relaxation and poling in optical fiber and waveguides from physical fundamentals, properties and fabrication approaches to applications. The meeting covers state-of-the-art advances in fiber and waveguide gratings in a program tailored for informal exchanges, forming new partnerships and reconnecting with colleagues.

Topics are divided into three main themes: fundamentals of photosensitivity, glass relaxation and poling; properties of grating structures, poled devices and techniques used in their fabrication; and industrial standardization and applications of gratings, glass relaxation and poled glass.

### CHAIRS

**Stephen Mihailov**, *National Research Council of Canada, Canada*, General Chair

**John Canning**, *University of Sydney, Australia*, Conference Chair

**Morten Ibsen**, *University of Southampton, UK*, Conference Chair

**Matthieu Lancry**, *Universite de Paris Sud, France*, Program Chair

Review the list of topic categories at [osa.org/BGPP](http://osa.org/BGPP).

## Nonlinear Photonics (NP)

NP is a venue for researchers interested in all aspects of nonlinear optical processes in structures, devices and systems.

The meeting scope covers both fundamental and applied nonlinear photonics with topics including temporal, spatial and spatio-temporal nonlinear effects, theoretical and computational methods, experimental techniques, nonlinear materials, nonlinear systems, novel optical fibers and waveguides, intermodal nonlinearities, ultrafast processes, photonic chaos, source development, solitons and rogue waves, frequency combs, supercontinuum generation, nonlinearity in nanophotonics, metamaterials and plasmonics, nonlinearity in systems, high field physics, quantum optics and filamentation.

### CHAIRS

**Alexander Gaeta**, *Columbia University, US*, General Chair

**Yaroslav Kartashov**, *ICFO – The Institute of Photonic Sciences, Spain*, General Chair

**Gian-Luca Oppo**, *University of Strathclyde, United Kingdom*, Program Chair

**Andrey Sukhorukov**, *Australian National University, Australia*, Program Chair

**Stefan Wabnitz**, *Universita degli Studi de Brescia, Italy*, Program Chair

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### TOPIC CATEGORIES

Review the list of topic categories at [osa.org/ACOFT](http://osa.org/ACOFT).

#### Guided wave physics

- Linear photonics
- Nonlinear photonics

#### Advances in optical fibre technology

- Microstructured fibre
- Novel optical fibres
- Fibre fabrication, handling and characterization
- Fibre amplifiers and lasers
- Fibre components
- Materials for optical fibres

#### Planar and integrated photonics

- Silicon photonics
- Passive waveguides and lightwave circuits
- 3-D photonics
- Nonlinear devices
- Active devices

#### Optical communication, network systems and data centers

- High speed transmission
- Digital signal processing and protocols
- Energy efficient communication
- Space division multiplexing
- Radio over fibre and microwave photonics

#### Mid-infrared guided wave optics

- Mid-infrared glass science and development
- Mid-infrared devices
- Mid-infrared applications

#### Sensing and novel applications

- Strain and temperature sensing
- Chemical fibre sensing
- Quantum photonics
- Fibre imaging



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### TOPIC CATEGORIES

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#### Fundamentals of photosensitivity, glass relaxation and poling

Photon-matter interactions, the similarity between single and multiphoton processing, ablation regimes, void formation, optically induced plasmas and nanostructures, exciton and exciplex formation, defects, phase transitions, optical-acoustic interactions, phonons, optical thermal interactions, transient index changes, Kramers-Kronig analyses, regeneration, hypersensitisation, annealing, optical chaos, optical localisation, emergent properties, optical and electronic analogies, radiation resistance, measurement methods, special fibres and waveguides, stress, composite effects, birefringence, transparency, Anderson localisation, solid-state autocatalysis, linear and nonlinear behavior.

**Properties of grating structures, poled devices  
and techniques used in their fabrication**

Temperature and strain performance, holographic writing, point-by-point inscription, phase front tuning, new writing methods, longitudinal properties, transverse properties, short pitch gratings, long pitch gratings, random gratings, transient properties, material properties, strain and thermal optic coefficients, acousto-optic coefficients, non-linear properties, new poling methods, new materials for poling, new materials for gratings, new materials for non-linear applications, radiation properties, annealing properties, chemical properties, biological affinity, biomedical compatibility, electromagnetic proof.

**Industrial standardization and applications of gratings,  
glass relaxation and poled glass**

Harsh environmental applications, biomedical applications, diagnostics, structural health monitoring, intelligent networks, telecommunications devices, lasers, sensors, high intensity optical field applications, space applications, spectral applications, new technologies, switching, routing, instrumentation, interrogation, oil and gas applications, industrial field trials, qualifications, international standards and standardization for different industries and applications, nuclear applications, new industry applications, super continuum generation, packaging.



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### Optical Pulses in Nonlinear Waveguides

- Parametric and stimulated scattering
- Temporal solitons
- Ultra-short pulse modelling

### Spatial and Temporal Nonlinear Interactions in Classical and Quantum Photonics

- Spatial optical solitons, self-trapping and self-guiding effects
- Spatio-temporal effects
- Nonlinear wave interactions in quantum photonics

### Nonlinear Cavities, Active Photonics with Gain and Dissipation, and Light-Matter Interactions

- Nonlinear interactions in optical cavities and microresonators
- Nonlinear effects in photonic crystals and interactions in periodic structures
- Waveguides and resonators with gain and loss
- Opto-mechanical interactions in waveguides and resonators
- Nonlinear light-matter interactions and Bose-Einstein condensation
- Active devices and lasers modelling

### **Nonlinear Nanophotonics, Plasmonics, and Metamaterials**

- Nonlinear properties of plasmonic materials
- Nonlinear scattering by nanoparticles
- Nonlinear metamaterials and metasurfaces
- Nonlinear effects in 2-D materials
- Finite difference time domain simulations

### **All-Optical Nonlinear Devices and Applications**

- Nonlinear Devices and Systems
- Application of cascaded and second order nonlinearities
- Quantum Information
- Measurements and microscopy
- Novel Nonlinear Materials and Structures
- System modelling