



## Photonic Fiber and Crystal Devices: Advances in Materials and Innovations in Device Applications XVIII (OP411)

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The Photonic Fibers and Crystal Devices Conference aims to establish a well-defined forum with focus on innovations of photonic, optoelectronic, and optical devices that depend essentially on advancement in materials processing, optical and photonic property, wave mixing, and photo-refractive phenomena. This conference is a continuation of the successful SPIE conferences on Photorefractive Fiber and Crystal Devices with strengthened topics on crystal growth of nonlinear optical materials. The scope of applications this conference encompasses covers a broad range from components to systems architectures in optical signal processing, optical storage, optical networks and communications, and advanced material-based novel photonic devices. The objective of this conference is to promote scientific interaction that bridges advancement in photonic fibers and crystal materials with innovations in photonic technology and device development.

Sessions will focus on the latest achievements on both photonic materials and device technologies that can lead to further advances in the communication, sensing, data storage, display, biomedical, and defense applications. The status and future challenges in these areas also will be reviewed by invited speakers.

Authors are encouraged to submit papers addressing the following session topics:

### PHOTONIC FIBERS AND CRYSTAL MATERIALS

- novel photorefractive, electro-optic, and nonlinear optical fibers and crystals including glasses, semiconductors, ferroelectrics, polymeric, chalcogenide, and magneto-optic materials
- crystal growth, defect and doping control, quasi phase matching and domain manipulation, polarization maintaining photonic crystal fiber designs and applications
- photonic fibers, 2- and 3-dimensionally engineered photonic crystal, and photonic bandgap materials
- photosensitivity and spectral responses, physical and optical characterizations
- experiments and theory that elucidate correlations between materials doping and defect-structure with photonic properties
- progress in high peak power capable photonic fibers
- advances in software, database, and machine learning for the design, simulation, and fabrication of photonic fibers and photonic devices
- additive manufacturing of photonic devices, photonic integrated circuits, and hybrid photonic systems.

### PHOTONIC DEVICES AND APPLICATIONS

- components for optical communication, sensing, and data storage, including transmission, amplification, modulation, detection, dispersion management, switching, data handling, and packaging
- integrated optical components, nonlinear frequency converters, diffractive devices, three-dimensional optical memory, and dynamic memories
- dynamic sensing for chemical, harsh environment, biophotonic, and defense applications
- adaptive optical devices utilizing coupled effects such as electro-optic, elasto-optics, photostriction, magneto-optics, and pyro-optics
- novel free-space and waveguiding optical components, devices and subsystems including supercontinuum lasers for photonic computing, optomechanics, interconnects, switching, and packaging of photonic processors
- photonic bandgap switches and modulation-based switching devices
- photonic devices for energy conversion and harvesting
- electromagnetics (nonlinear phenomena and propagation of light in nonlinear crystals/optical media)
- crystalline fiber lasers.

### SPECIAL SESSION: VOLUME HOLOGRAPHIC OPTICAL ELEMENTS (HOES) AND APPLICATIONS TO VR/AR/MR

This special session will include topics encompassing analog and digital holographic data storage, the holographic miniaturization of functional mapping, holographic image amplification, volume holographic imaging, 3D imaging and processing, and 3D displays. Especially, papers are invited that explore advancements and challenges in Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) applications. Topics of interest include the multiplexing ability of volume Holographic Optical Elements (HOEs), polarization holography, active switching of HOEs, device fabrication, integration with micro-LEDs, and the design of metasurfaces, etc.

(This special session will be co-chaired by **Ching-Cherng Sun** and **Partha Banerjee**).

## Present your research at SPIE Optics + Photonics

Below are abstract submission instructions, the accompanying submission agreement, conference presentation guidelines, and guidelines for publishing in the Proceedings of SPIE on the SPIE Digital Library. Submissions subject to chair approval.

### Important dates

Abstracts due	7 February 2024
Registration opens	April 2024
Authors notified and program posts online	29 April 2024
Submission system opens for manuscripts and poster PDFs*	17 June 2024
Poster PDFs due for spie.org preview and publication	24 July 2024
Manuscripts due	31 July 2024
Advance upload deadline for oral presentation slides**	16 August 2024

\*Contact author or speaker must register prior to uploading

\*\*After this date slides must be uploaded onsite at Speaker Check-In

### What you will need to submit

- Title
- Author(s) information
- Speaker biography (1000-character max including spaces)
- Abstract for technical review (200-300 words; text only)
- Summary of abstract for display in the program (50-150 words; text only)
- Keywords used in search for your paper (optional)
- Check the individual conference call for papers for additional requirements (i.e. extended abstract PDF upload for review or instructions for award competitions)

Note: Only original material should be submitted. Commercial papers, papers with no new research/development content, and papers with proprietary restrictions will not be accepted for presentation.

### How to submit your abstract

- Visit the conference page: [www.spie.org/op411call](http://www.spie.org/op411call)
- You may submit more than one abstract but submit each abstract only once
- Click the "Submit An Abstract" button on the conference page
- Sign in to your SPIE account or create an account if you do not already have one
- Follow the steps in the submission wizard until the submission process is completed

### Submission agreement

All presenting authors, including keynote, invited, oral, and poster presenters, agree to the following conditions by submitting an abstract:

- Register and pay the author registration fee
- Oral presenters: recording and publication of your onsite presentation (slides synched with voice) for publication in the Proceedings of SPIE in the SPIE Digital Library
- Poster presenters: submit a poster PDF by the advertised due dates for publication in the Proceedings of SPIE in the SPIE Digital Library; poster PDFs may also be published and viewable in the spie.org program during and immediately after the event. Each poster must have a unique presenter; one person may not present more than one poster per session
- Email messaging for the conference series
- Submit a manuscript by the advertised due date for publication in the Proceedings of SPIE in the SPIE Digital Library
- Obtain funding for registration fees, travel, and accommodations
- Attend the meeting
- Present at the scheduled time

### Review and program placement

- To ensure a high-quality conference, all submissions will be assessed by the conference chair/editor for technical merit and suitability of content
- Conference chairs/editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations
- Final placement in an oral or poster session is subject to chair discretion

### Publication of Proceedings in the SPIE Digital Library

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### Contact information

For questions about your presentation, submitting an abstract, or the meeting, contact your [Conference Program Coordinator](#).

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