



Quantum Nanophotonic Materials, Devices, and Systems 2024 (OP112)

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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.

Quantum nanophotonic materials, devices, and systems aims at establishing a multidisciplinary forum for physicists, material scientists, and optical engineers to discuss the current progress, challenges, and future directions of the burgeoning field of quantum nanophotonics.

Contributions are solicited in areas focusing on:

MATERIAL PLATFORMS FOR QUANTUM PHOTONIC DEVICES

- wide bandgap materials: diamond, silicon carbide, rare earths
- semiconductors: silicon, III-V and II-V compounds
- two-dimensional materials: graphene, boron-nitride, transition metal dichalcogenides
- quantum plasmonics
- quantum meta-optics
- nanoantennas
- topological materials.

QUANTUM PHOTONIC DEVICES FOR SIMULATIONS, METROLOGY, SENSING, IMAGING, COMMUNICATION AND COMPUTING

- nanoscale atom traps
- single-photon sources and modulators
- single-photon and photon-number discriminating detectors
- spin-photon interfaces for sensors and repeaters
- quantum gates
- optomechanical devices
- quantum chemistry.

QUANTUM NANOPHOTONIC SYSTEMS

- quantum key distribution and quantum random number generators
- quantum computers and simulators
- quantum sensors based on solid-state systems and atom chips
- quantum engineering, including nanofabrication and integration
- quantum control, including error correction and tolerance
- quantum entanglement and imaging.

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/op12call
- 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

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