



Active Photonic Platforms (APP) 2024 (OP102)

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The Active Photonic Platforms (APP) 2024 conference aims to bring together scientists and engineers working in the newest developments in fundamentals and applications of structured-material platforms for active light control. **This conference will confer a Best Poster Presentation award recognized with an official SPIE certificate. To ensure consideration for this award please select "poster only" for presentation format upon submission of your abstract by February 7th 2024.**

Platforms comprising artificially patterned materials exploit the synergy between material photonic responses and structural form to enable transformative light-matter interactions which continually push forward the state-of-the-art in light control capabilities. While tremendous progress has been made with only passive materials, such as metals and dielectrics, the potential of photonic platforms transcends into new unexplored domains when interfaced with active material, which may possess tunable or dynamic photonic properties or respond to an applied stimulus. Some examples of active materials are gain materials, non-linear and electro-optic media, phase-change materials, magneto-photonic material, 2D materials, quantum emitters, other bias or strain-controlled photonic media etc.

Structured material platforms with active components can enable entirely new regimes of light control crucial to a wide range of applications and technologies for a sustainable future. Examples include energy efficient all-optical computing and communications, all-optical memory components, reconfigurable photonic devices, chip-scale low-threshold nanolasers, modulators, devices for thermal management and radiative cooling, photodetectors, biological/chemical/thermal/electrical sensors and others.

Topics will cover active photonic platforms functional across the EM spectrum, from THz to UV frequencies, as well as new exotic types of light propagation, which could open entirely new directions in active photonics. Contributions from academia, government, industry, and other research organizations are solicited in areas including:

- Theory and modeling approaches for non-linear and gain photonic media
- Advances in non-linear optical phenomena and materials
- Electro-optic nanophotonic systems and modulators for devices with greener footprint
- Novel harmonic generation and frequency mixing phenomena
- Time-dependent photonic responses: theory, modeling and experimental realization
- PT-symmetric, non-Hermitian and pseudo-Hermitian photonic systems
- Topological and non-reciprocal photonic platforms; optical isolators
- Tunable and dynamically changeable optical properties and systems
- Reconfigurable photonic platforms and effects
- Novel lasing systems: polariton, quantum-dot, and random lasers
- Tailoring quantum emitters: structured photonic environment; time-periodic driving
- Low-threshold lasing and energy-efficient chip-scale light sources
- Weak and strong coupling: cavity QED; phonon polaritons; exciton polaritons
- Non-classical sources (e.g., quantum dots, quantum wires, NV-centers etc.): physics and advances in experimental realization
- Chiro-optical activity with nanocomposites, supramolecular systems or nanostructured media
- Phase-change materials for photonic devices
- All-photonic memory and neuromorphic devices
- Graphene and carbon-based materials for photonics and optoelectronics
- Photonics with 2D and quasi-2D materials: hBN, transition metal dichalcogenides (TMDs), Black phosphorous (BP), MXenes (transition metal carbides, nitrides or carbonitrides)
- Van der Waals heterostructures; twisted Van der Waals heterostructures; photonic Moiré' lattices

- Hybrid integration with 2D/quasi-2D material or material with dynamically changeable optical properties
- Novel magneto-photonics phenomena and systems
- Advances in fabrication of photonic structures with active materials including sustainable approaches for manufacturing
- Photonic approaches for cooling and thermal management: fundamentals and applications for sustainability
- Novel systems for light absorption enhancement
- Sensors and photodetectors based on active control of light
- Optofluidic chips
- Optomechanical devices; optical MEMs for energy-efficient telecommunications.

continued next page →

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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/op102call
- 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
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- 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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