



SPIE. PHOTONICS WEST OPTO

25 - 30 January 2025
The Moscone Center
San Francisco, CA, USA

CALL FOR PAPERS

Submit abstracts by
17 July 2024

Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XVIII (OE401)

Conference Chairs: **Christophe Moser**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Eva Blasco**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Debashis Chanda**, Univ. of Central Florida (United States)

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Abraham Vázquez-Guardado, North Carolina State Univ. (United States); **Daryl W. Yee**, EPFL (Switzerland)

Technologies for fabrication of optics and photonics at the micro- and nanoscale continue to advance and diversify due to rising demands for miniaturization, cost reduction, functional integration, and increased performance in optical and photonic systems. Examples include three-dimensional microoptics, topological photonics, photonic crystals, photonic metamaterials, plasmonic devices, sub-wavelength optics, microrefractive optics, diffractive optics, optical waveguides, and heterogeneously integrated active and passive micro- and nano-optical devices. These devices are playing increasing roles in a wide range of applications, including sensors, communications, imaging, biomedical, data storage, photovoltaics and other areas.

Both conventional and unconventional micro- and nanofabrication techniques serve as fundamental enablers for wide ranges of passive and active optical components and devices. To this end, this conference provides a forum for exchange of viewpoints and reports on new techniques and advances in fabrication methods for optics and photonics at the micro- and nanoscale. Applications enabled through these novel fabrication processes are also appropriate.

Topics of interest include, but are not limited to:

NON-CONVENTIONAL LITHOGRAPHY AND NOVEL APPROACHES

- two-photon and two-step processes for two-dimensional and three-dimensional micro- and nanostructures
- STED inspired lithography
- lithography with structured light
- soft-lithography
- controlled self-assembly.

LITHOGRAPHIC FABRICATION APPROACHES

- three-dimensional laser lithography, three-dimensional microprinting
- volumetric/holographic lithography and multi-beam exposure methods
- fabrication methodologies based on binary, grayscale, and interferometric techniques
- additional techniques, such as additive lithography, and lift-off processes for sub-micron patterning.

MATERIALS ISSUES AND TECHNOLOGIES FOR MICRO- AND NANO-OPTICS

- light-matter interaction under ultra-short laser pulses
- two- and multiphoton-absorption processes
- photochemistry under ultra-short laser exposure
- replication in polymer, metals and other materials
- novel and environmental friendly photoresists and processes.

PROCESSING OF NANOPHOTONIC DEVICES

- nanopatterning for site selective growth
- texturing and patterning for enhanced light extraction
- fabrication of plasmonic devices
- quantum device fabrication for micro and nano-optics.

MICRO- AND NANO-OPTICAL INTEGRATION AND MANUFACTURING

- passive and/or active integration

- quality and metrology issues
- volume and sustainable fabrication techniques for micro- and nano-optics and photonics.

JOINT SESSION WITH OE401 AND OE403

Advanced Fabrication using a Digital Micromirror Device or MEMS Array

Active research in the fields of advanced fabrication and MEMS Arrays, such as the digital micromirror device, have shown application and promise for implementing lithography and other forms of high precision printing. The purpose of this joint session is to explore the relationships between MEMS technology and fabrication as they relate to:

- 3D printing
- additive manufacturing
- lithography
- structured light.

JOINT SESSION WITH OE401 AND LASE LA401

3D Printing

The purpose of this joint session is to emphasize the growing field of laser printing/fabrication of micro/nano-sized structures for optics and photonics.

BEST PAPER AWARDS

We are pleased to announce that a sponsored cash prize will be awarded to the best paper and best student paper in this conference. Qualifying papers will be evaluated by the awards committee. Manuscripts will be judged based on scientific merit, impact, and clarity. The winners will be announced during the conference and the presenting author will be awarded a cash prize.

TO BE ELIGIBLE FOR THE BEST PAPER AWARD, YOU MUST:

- be listed as the speaker on an accepted paper within this conference
- have conducted the majority of the work to be presented
- submit your manuscript online by the deadline
- present your paper as scheduled.

TO BE ELIGIBLE FOR THE BEST STUDENT PAPER AWARD, YOU MUST:

- be a student without a doctoral degree (undergraduate, graduate, or PhD student)
- submit your abstract online, and select "Yes" when asked if you are a full-time student, and select yourself as the speaker
- when submitting your abstract, under TOPIC selection, choose "Consider for Best Student Paper Award"
- be listed as the speaker on an accepted paper within this conference
- have conducted the majority of the work to be presented
- submit your manuscript online by the deadline
- present your paper as scheduled.

NOMINATIONS

All submitted papers will be eligible for the awards if they meet the above criteria.

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Present your research at SPIE Photonics West

Follow the instructions below to develop a successful abstract for submission to a conference and review policies for publication in the Proceedings of SPIE in the SPIE Digital Library. Submissions subject to chair approval.

Important dates

Abstracts due	17 July 2024
Registration opens	October 2024
Authors notified and program posts online	7 October 2024
Submission system opens for manuscripts and poster PDFs*	25 November 2024
Poster PDFs due for spie.org preview and publication	2 January 2025
Manuscripts due	8 January 2025
Advance upload deadline for oral presentation slides**	23 January 2025

*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

- Presentation 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., special abstract requirements 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/oe40|call
- Choose one conference that most closely matches the topics of your abstract. You may submit more than one abstract, but submit each abstract only once
- Click the title of the conference to view the full description and submit by clicking the "Submit an Abstract" button on that 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
- If your submission is related to an application track below, indicate the appropriate track when prompted during the submission process

Application track

Listed below are the application tracks available for this meeting. Application tracks aggregate presentations and focus on emerging technical and societal needs that require a multidisciplinary approach.

- **AI/ML:** Papers that highlight the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems across multiple sectors, technologies, and applications
- **Sustainability:** Papers that highlight the use of optics and photonics for renewable energy, natural resource management, sustainable manufacturing, and greenhouse gas mitigation in support of the UN Sustainable Development Goals
- **Brain function:** Papers that highlight the development of innovative optics and photonics technologies that increase our understanding of brain physiology and function
- **Translational research:** Papers that highlight the transition from bench to bedside using the latest photonics technologies, tools, and techniques for healthcare
- **3D printing:** Papers that highlight the innovative use of optics and photonics in multidisciplinary applications for multidimensional manufacturing
- **Photonic chips:** Papers that highlight advances in materials, design, fabrication, integration, testing and packaging of photonic components at the chip level

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 conference registration fee
- Agree to receive email messaging for the conference series
- 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: one person may not present more than two posters in a poster session; poster presenters may submit an optional poster PDF available for preview in the online program (web and app) and for publication in the Proceedings of SPIE in the SPIE Digital Library
- 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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