



**SPIE. PHOTONICS
WEST
BIOS**

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

CALL FOR PAPERS

Submit abstracts by
17 July 2024

Microfluidics, BioMEMS, and Medical Microsystems XXIII (BO307)

Conference Chairs: **Bastian E. Rapp**, Univ. of Freiburg (Germany); **Colin Dalton**, Univ. of Calgary (Canada)

Program Committee: **Bonnie L. Gray**, Simon Fraser Univ. (Canada); **Jaione Tirapu-Azpiroz**, IBM Research - Brazil (Brazil); **Holger Becker**, microfluidic ChipShop GmbH (Germany); **Yolanda Fintschenko**, Daybreak Labs (United States); **Hayden K. Taylor**, Univ. of California, Berkeley (United States); **Julian Thiele**, Leibniz-Institut für Polymerforschung Dresden e.V. (Germany)

SPECIAL ABSTRACT REQUIREMENTS

Submissions to this conference must include:

- 100-word text abstract (for online program)
- 250-word text abstract (for technical review)
- 2-page extended abstract (for committee review only). The extended abstract must be submitted as a separate PDF document limited to two pages, including tables and figures. Include author names and affiliations; text; any figures, tables, or images; and sufficient data to permit committee review.

The purpose of this conference is to provide an international technical forum to showcase recent advances in microfluidics, BioMEMS, and medical microsystems. Microfluidic devices and systems have created a tremendous interest in many application fields, including life sciences, point of care (POC) diagnostics, and environmental applications. They offer many advantages over the existing macroscale systems, including compact size, disposability, higher speed and parallelism of analyses, increased functionality and decreased sample/reagent volumes. In the life sciences, recent research efforts have focused on bio/chemical analyses, pharmaceutical high-throughput systems, and biomaterial surface modification. The interaction of microsystems with living cells and tissues opens a pathway to novel methods of medical diagnostics and therapeutics. Thus, the range of interests has expanded from the molecular scale over single cells to more complex biological systems, and finally, living organisms. Further, several conventional methods in medical engineering for diagnosis and therapy have also been shifting towards miniaturization and MEMS technologies, including minimally invasive surgery, in vivo and ex vivo monitoring, and smart implants. Last, but not least, environmental applications have focused on developing inexpensive sensors for in situ monitoring of contaminants in the environment for public safety or measuring a person's exposure to environmental contamination.

For many of these applications, microfluidics and other MEMS technologies are essential, as they provide the functional basis of many research tools as well as commercial devices and applications. Thus, over the past several years, there has been a significant increase in the activities associated with understanding, development, and application of micromechanical and microfluidic devices and systems for BioMEMS and medical microsystems.

Papers are solicited on the following major topics and other related subjects:

MICRO/NANO FLUIDIC COMPONENTS

- fluid delivery, transport, and control
- micro -valves, -pumps, -mixers, and -reactors
- nanofluidic devices and systems
- microdroplet generation and manipulations
- micro-heating/cooling devices
- emerging microfluidic approaches (inertial microfluidics, electrofluidics, paper/textile microfluidics)
- optofluidics

- CAD, modeling, and analysis.

MICROFABRICATION TECHNOLOGIES FOR MICROFLUIDICS AND BIOMEMS

- polymer microfabrication methods
- emerging fabrication technologies (e.g., 3D printing/additive manufacturing)
- fluidic modules and interconnects
- fluidic packaging and assembly
- microstructuring of organic materials
- functional materials for microfluidics and BioMEMS
- surface texturing and modification.

APPLICATIONS OF MICROFLUIDICS, BIOMEMS, AND MEDICAL MICROSYSTEMS

- point-of-care (POC) medical monitoring and diagnostics
- nano bio/medical sensors
- optofluidics, on-chip waveguides and optical detection
- cell-based sensing devices and systems, flow cytometry
- implantable medical microsystems
- sensors and systems for environmental monitoring
- sensors and systems for in vitro/in vivo monitoring and diagnosis
- cells, tissues, and organisms on-a-chip
- microfluidic-based drug development and analysis.

BEST STUDENT PAPER AWARD

JUDGING AND REQUIREMENTS

Presentations and manuscripts will be judged based on scientific merit, impact, and clarity. Candidates for the award need to be the presenting author, a full-time student, must have conducted the majority of the research presented in the paper, and must submit their manuscript by the deadline.

NOMINATIONS

To be considered, submit your abstract online, select "Yes" when asked if you are a full-time student, and select yourself as the speaker.

www.spie.org/bo307call

#PhotonicsWest

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SPIE.

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/bo307call
- 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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- More publication information available on the [SPIE Digital Library](http://SPIEDigitalLibrary)

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Contact information

QUESTIONS?

Contact the coordinator listed in your spie.org account.

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