



CALL FOR PAPERS

**SPIE. PHOTONICS
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BIOS**

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

Submit abstracts by
17 July 2024

Label-free Biomedical Imaging and Sensing (LBIS) 2025 (BO508)

Conference Chairs: **Natan T. Shaked**, Tel Aviv Univ. (Israel); **Oliver Hayden**, Technische Univ. München (Germany)

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Label-free biomedical optical imaging and sensing refers to optical measurements performed on biological samples or living organisms without the need for utilizing labeling agents. Label-free imaging of cells in vitro is specifically of interest, since cells are optically transparent and regular bright-field imaging does not present enough contrast. Labeling agents, such as fluorescent dyes or labels using antibodies, can create molecular specificity and enhance contrast but they might interfere with the biological phenomena measured, and thus are not always allowed. In vivo imaging of living organisms, and humans in particular, should be preferably performed without using labeling agents to avoid possible hazardous effects induced by these agents.

Optical detection methods for label-free imaging and sensing are typically based on internal contrast mechanisms of the sample; for example, its ability to delay the light interacting with the sample due to refractive index changes, or its ability to create unique optical spectroscopic, auto-fluorescence, and birefringence or acoustic signatures. In addition, the substrate holding the sample during measurement can be used to enhance the detection and monitor of the sample properties via various effects, including plasmon resonance, total internal reflection, etc. Furthermore, life science tools, such as optogenetics, gene expression or editing methods, can be applied to achieve molecular specificity in living objects with high spatial and temporal resolution.

Label-free imaging and sensing in the nanoscale, including tracking of single molecules, is of high interest as well. Specifically, label-free optical nanoscopy is still considered as an unsolved challenge in this field. Clinical, preclinical, life science, industrial, and environmental application fields are attractive for translational research and workflow solutions with label-free imaging and sensing.

This conference will gather academic, clinical and industrial researchers from various disciplines, who are interested in optical imaging and sensing of biological substances without using labeling.

The keynote presentation from 2023 was given by:

STEPHEN A. BOPPART, UNIVERSITY OF ILLINOIS, USA

This year, the conference will enhance the visibility of female scientists by the selection of Keynote and Invited lectures.

Relevant topics include but are not limited to:

- Phase imaging (Zernike's, differential interference contrast (DIC), holography, optical diffraction tomography (ODT), etc.)
- Coherent Raman spectroscopy techniques (CARS, SRS, etc.)
- Spontaneous Raman imaging
- Interferometric and coherence gated imaging (optical coherence tomography, etc.)
- Polarization and birefringence imaging
- Dark-field microscopy
- Brillouin microscopy (spontaneous and stimulated)
- High harmonic generation and nonlinear imaging and sensing
- Auto-fluorescence imaging and sensing
- Hyperspectral imaging and sensing
- Total internal reflection imaging and sensing
- Acoustic and photoacoustic imaging
- Plasmonic sensors
- Fiber-optics-based label-free bio-detectors
- Label-free imaging in the nano-scale
- On-chip implementations of label-free sensors
- Label-free imaging using optogenetic, gene expression and editing tools
- Workflow solutions for clinical, preclinical, life science, industrial, and environmental applications
- Advanced algorithms for label-free imaging and sensing.

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#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/bo508call
- 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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