



Infrared Sensors, Devices, and Applications XIV (OP422)

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The detection of infrared radiation has proven to be a viable tool in environmental studies, homeland security, astronomy, meteorological satellites and in medical, automotive, and military applications. This conference will provide a venue for papers ranging from basic device physics to novel applications. Improvements in infrared sensing & imaging relating to reduced feature size for the read-out integrated circuit (ROIC) fabrication, and compositional and doping control for the detector layer, have led to new opportunities for meeting the needs of the terrestrial, air, and space user communities. Unique IR device structures have been shown to evolve from new capabilities in the nanotechnology realm. Recent developments in novel detector materials, including those for strained superlattice and barrier architectures, promise significant technological advances. Room temperature infrared detectors for terrestrial use also benefit from these advancements. Various read-out circuit architectures allow functionality for higher-sensitivity cooled IR focal plane arrays, and also permit increased capabilities. We are also seeking papers that expand the state-of-the-art and affordability of sensors, with novel pixel readout approaches and improved signal processing, including the digital flow of data off the FPA in the form of LVDS, for example.

The conference is a high-level forum bringing together scientists and engineers involved in the research, design, and development of infrared sensors and focal plane arrays. A special session titled "Infrared Technology to address Global Climate Change" is in the planning stage for this conference.

Papers are solicited for infrared technology, including the following topics:

NOVEL DETECTOR MATERIALS AND ARCHITECTURES

- SWIR, MWIR, LWIR, and VLWIR detectors
- materials (e.g., InSb, HgCdTe, InAsSb)
- nanotechnology-based EO/IR detectors/arrays
- nano-/microbolometers
- HgCdTe (MCT) technology
- HgCdTe detector growth on alternative substrates
- III-V strained-layer superlattice detector technology
- higher-operating temperature infrared detectors
- high sensitivity at low photon flux detectors/applications
- UV, visible and IR avalanche photodiodes
- quantum dot detector technology.

MODELING OF IR OPTOELECTRONIC DEVICES AND MATERIALS

- carrier transport models for novel IR materials

- carrier transport models for super lattices and quantum devices
- transport properties in non-crystalline materials
- simulation techniques for detector arrays
- optical and electrical simulation models for crosstalk, modulation transfer functions and photon recycling
- models for point and extended defects and their impact on device performance
- novel numerical approaches for large scale IR detector and array simulation.

FOCAL PLANE ARRAYS, READ-OUT INTEGRATED CIRCUITS, AND COMPONENTS

- FPA signal and data processing, both on- and off-Chip
- digital FPAs
- electronic readout image intensifier devices
- smart focal planes
- diffractive optics on the FPA
- advanced microchannel plates
- photon-counting technology
- image intensification
- improved photocathodes
- plasmonics.

APPLICATIONS OF IR TECHNOLOGY

- terrestrial, air, and space sensors
- multispectral sensors
- imaging spectrometer applications
- imaging polarimeter applications
- infrared imaging for next generation smart phones
- space-based sensing applications
- astronomical applications
- climate monitoring and change sensing technologies
- industrial and structural applications
- automotive applications
- Bio-medical applications
- cameras for low light levels
- unmanned autonomous vehicle cameras.

ADVANCED CHARACTERIZATION TECHNIQUES

- energetic particle radiation effects
- anomalous noise sources
- responsivity and frequency response
- cryogenic and ultra-low noise.

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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/op422call
- 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:

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- 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
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- Final placement in an oral or poster session is subject to chair discretion

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Contact information

For questions about your presentation, submitting an abstract, or the meeting, contact your [Conference Program Coordinator](#).

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