Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XIII (OE102)

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This conference attempts to capture basic research and breakthroughs in the application of photonic/novel device architectures and the development of advanced modeling and simulation techniques to feed the innovation pipeline leading to revolutionary and practically viable high-efficiency photovoltaic (PV) technologies. The conference also aims at providing an interdisciplinary forum to enhance interactions between physicists, photonic engineers, and photovoltaic device specialists at both the experimental and theoretical levels.

Theoretical or experimental papers are sought to address recent advances in basic material/device physics, including new approaches to spectral engineering (i.e. luminescent concentrators, up-down converters), light concentration, surface texturing and light trapping (i.e. ordered and disordered patterning, micro/nano-engineered ARs), as well as synergistic hybrid/multifunctional designs.

• advanced optical characterization techniques, including photoluminescence, electroluminescence, cathodoluminescence, ellipsometry, reflectometry, and time-resolved measurements. Correlative and multi-scale characterization techniques are also welcome
• quantum- and nano-structured devices with a particular focus on deciphering the science at play in photogeneration, recombination, and carrier transport in quantum well/quantum dot and wire devices
• novel materials for PV absorbers (perovskites, and related materials), polycrystalline semiconductors (CdTe, CIGS, CZTS), hybrid organic/inorganic heterostructure devices, and advances in transparent conducting oxides
• defect-tolerant PV designs and application of photonics to enhance defect tolerance (dislocations, radiation defects, grain- boundaries, points defects) of solar cells
• contributions dealing with advanced, scalable micro/nano-fabrication technique, the development of low-cost fabrication of material and devices, are also of relevance.

Finally, the conference also welcomes new and emerging methods in simulation of PV and hybrid photonic/PV devices, including but not limited to 3D-drift diffusion and RCWA models, integrated ab-initio, multi-scale simulation techniques including AI and machine learning approaches.

Submit abstracts by 19 July 2023
The Moscone Center
San Francisco, CA, USA

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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**

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<th>Event</th>
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<tr>
<td>Abstracts due</td>
<td>19 July 2023</td>
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<tr>
<td>Registration opens</td>
<td>October 2023</td>
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<tr>
<td>Authors notified and program posts online</td>
<td>9 October 2023</td>
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<tr>
<td>Submission system opens for manuscripts and poster PDFs*</td>
<td>27 November 2023</td>
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<tr>
<td>Poster PDFs due for spie.org preview and publication</td>
<td>3 January 2024</td>
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<td>Manuscripts due</td>
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<td>Advance upload deadline for oral presentation slides**</td>
<td>25 January 2024</td>
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*Contact author or speaker must register prior to uploading

**After this date slides must be uploaded onsite at Speaker Check-in**

*Why you will need to submit*

- Presentation title
- Author(s) information
- Speaker biography
- 250-word abstract for technical review
- 100-word summary of abstract for display in the program
- Keywords used in search for your paper (optional)
- Check the individual conference call for papers for additional requirements (for example, some conferences require 2- to 3-page extended summary for technical review, or have 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.

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- Submit by clicking 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
- 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

**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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- 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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