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WEST  
OPTO

22-27 January 2022  
The Moscone Center  
San Francisco, CA, USA

Submit abstracts by  
11 August 2021



## Photonic Heat Engines: Science and Applications IV (OE504)

*Conference Chairs:* **Denis V. Seletskiy**, Polytechnique Montréal (Canada); **Masaru K. Kuno**, Univ. of Notre Dame (United States); **Peter J. Pauzauskie**, Univ. of Washington (United States)

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The emerging field of photonic heat engines generally encompasses the science of manipulation of thermal state of matter using or involving electromagnetic and optical radiation. In particular, the field of laser cooling of solids (optical refrigeration) and the related areas of electroluminescence refrigeration and radiation-balanced lasers have been advancing at a rapid pace. Most recently, optical refrigeration in rare-earth-doped crystals has achieved sub-100K temperatures which has subsequently led to the demonstration of the world's first all-solid-state cryocooler. On the more fundamental side, optical refrigeration has been used to manipulate and investigate micro-mechanical systems and nano structures approaching their quantum-mechanical ground state. Mitigating and/or balancing the heat generated from quantum defects in solid-state lasers by anti-Stokes fluorescence cooling has led to novel "athermal" or radiation-balanced lasers, which promises to eliminate thermal instabilities in high power solid-state lasers. In parallel, fundamental research on optical refrigeration and electroluminescence cooling in semiconductor structures has advanced immensely in recent years. In addition to direct applications of laser cooling, the related fields of thermophotonics and thermophotovoltaics exploit efficient harvesting of electro-and photo-luminescence in semiconductors for conversion of waste or solar heat into electricity.

We encourage the submission of papers dealing with experimental and theoretical studies as well as the applications of photonic heat engines including but not limited to the fields of optical and electroluminescence refrigeration, radiation balanced lasers, thermophotonics, thermophotovoltaics and optomechanical cooling.

# Present your research at SPIE Photonics West

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

Abstract submission deadline	11 August 2021
Author notification	11 October 2021
Submission system opens for presentations and manuscripts*	29 November 2021
Manuscript due date	29 December 2021
Oral presentation videos due	29 December 2021
Poster PDF and preview videos due	29 December 2021
Oral presentation slide deadline	20 January 2022

\*Authors must register prior to uploading.

## What you will need to submit

- Title
- Author(s) information
- 250-word abstract for technical review
- 100-word summary for 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.

## How to submit your abstract

- Visit the conference page: [www.spie.org/oe504call](http://www.spie.org/oe504call)
- 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.
- If your submission is related to an application track below, indicate the appropriate track when prompted during the submission process.

## Application track

- **Brain:** Papers that describe the development of innovative technologies that will increase our understanding of brain function.
- **Translational Research:** Papers that showcase the latest photonics technologies, tools, and techniques with high potential to impact healthcare.
- **3D Printing:** Papers that showcase innovative ways to apply this multidimensional/multidisciplinary technology.
- **COVID-19 Research:** Papers that illustrate the creativity and breadth of the optics and photonics community's response to the COVID-19 pandemic.

## 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.
- Oral Presenters: Submit a presentation video by the advertised due date, or agree to the presentation capture of your presentation on site, for online conference viewing during the event and publication in the Proceedings of SPIE on the SPIE Digital Library.
- Poster Presenters: Submit a Poster PDF and optional preview video by the advertised due date, for online conference viewing during the event and publication in the Proceedings of SPIE on the SPIE Digital Library.
- Submit a 4-page-minimum manuscript by the advertised due date, for online conference viewing during the event and publication in the Proceedings of SPIE on the SPIE Digital Library.
- Obtain funding for registration fees, travel, and accommodations, independent of SPIE, through their sponsoring organizations.
- Ensure that all clearances, including government and company clearance, have been obtained to present and publish. If you are a DoD contractor in the USA, allow at least 60 days for clearance.
- 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.

## Publication of Proceedings in the SPIE Digital Library

- SPIE will publish all presentations for viewing during the conference, as well as permanently archive all presentations in the conference proceedings on the SPIE Digital Library.
- SPIE retains rights to distribute and market the official SPIE recording of the presentation, presentation video, and/or poster.
- Most SPIE conferences follow an onsite publication model, meaning that manuscripts received by the advertised due date will be published for online viewing during the event, as well as archived in the SPIE Digital Library.
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