## PROCEEDINGS OF SPIE

## New Concepts in Solar and Thermal Radiation Conversion V

Peter Bermel
Jeremy N. Munday
Editors

23 August 2023 San Diego, California, United States

Sponsored and Published by SPIE

**Volume 12668** 

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings: Author(s), "Title of Paper," in New Concepts in Solar and Thermal Radiation Conversion V, edited by Peter Bermel, Jeremy N. Munday, Proc. of SPIE 12668, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510665507

ISBN: 9781510665514 (electronic)

Published by

SPIF

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) SPIE.org

Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.



**Paper Numbering:** A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

## **Contents**

v Conference Committee

	LUMINESCENT SOLAR CONCENTRATORS
12668 02	Strategies for the optimization of color neutral, transparent, and efficient luminescent solar concentrators (Invited Paper) [12668-1]
12668 03	Photonic luminescent solar concentrator designs for high efficiency, low-cost photovoltaics [12668-3]
	PHOTOVOLTAICS II
12668 04	Ultra-thin transition metal di-chalcogenides (TMDCs) as radiation-resistant photovoltaic materials for space [12668-9]
	RADIATIVE COOLING
12668 05	Adjoint Kirchhoff's law for all thermal emitters [12668-12]
	RENEWABLE ENERGY APPLICATIONS
12668 06	Effect of electrode materials on the photo-electric response of a hybrid solar cell-supercapacitor with a photoactive gel electrolyte [12668-13]
	POSTER SESSION
12668 07	Surfactant free, easy, low-cost, and large scale hydrothermal synthesis and characterization of CZTS ink for photovoltaic utility [12668-18]