

PROCEEDINGS OF SPIE

# ***Organic and Hybrid Light Emitting Materials and Devices XXVII***

**Ji-Seon Kim  
Tae-Woo Lee  
Franky So**  
*Editors*

**21–22 August 2023  
San Diego, California, United States**

*Sponsored and Published by*  
SPIE

**Volume 12659**

Proceedings of SPIE 0277-786X, V. 12659

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

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 [SPIDigitalLibrary.org](http://SPIDigitalLibrary.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 *Organic and Hybrid Light Emitting Materials and Devices XXVII*, edited by Ji-Seon Kim, Tae-Woo Lee, Franky So, Proc. of SPIE 12659, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X  
ISSN: 1996-756X (electronic)

ISBN: 9781510665323  
ISBN: 9781510665330 (electronic)

Published by  
**SPIE**  
P.O. Box 10, Bellingham, Washington 98227-0010 USA  
Telephone +1 360 676 3290 (Pacific Time)  
[SPIE.org](http://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](http://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.

**SPIE. DIGITAL LIBRARY**  
[SPIDigitalLibrary.org](http://SPIDigitalLibrary.org)

---

**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*

---

## PEROVSKITE LIGHT-EMITTING MATERIALS AND DEVICES II

---

12659 02 **Evidence for generation of trap states during degradation of TADF OLEDs** [12659-10]

---

## PHOTOPHYSICS OF PEROVSKITE LIGHT-EMITTING MATERIALS

---

12659 03 **Impact of trap position on the current density-voltage characteristics of organic semiconductor devices** [12659-14]

---

## FABRICATION OF FULL COLOR, PATTERNED, AND STRETCHABLE DISPLAYS I

---

12659 04 **Organic light-emitting diode (OLED) based bio-platform for phototherapeutics (Invited Paper)** [12659-38]

---

## FABRICATION OF FULL COLOR, PATTERNED, AND STRETCHABLE DISPLAYS II

---

12659 05 **Controlling charge accumulation properties at organic hetero-interfaces using dipolar doping of hole transport layers (Invited Paper)** [12659-12]

---

## POSTER SESSION

---

12659 06 **Hole transport materials for QLEDs: a combined approach of machine learning and atomistic simulation** [12659-51]

12659 07 **Impact of Bi doping on the structural and optical properties of the lead-free double perovskites (Cs<sub>2</sub>SnCl<sub>6</sub>:Bi<sup>3+</sup>) for optoelectronic applications** [12659-65]

12659 08 **Selection of hole transport layer for Pb-Sn binary perovskite solar cells** [12659-66]

12659 09 **Synthesis and characterization of cesium europium chloride bromide lead-free perovskite nanocrystals** [12659-67]

**DIGITAL POSTER SESSION**

---

12659 0B **Extremely high pixel density color conversion micro-LED displays with high efficiency and wide color gamut coverage** [12659-52]