

PROCEEDINGS OF SPIE

Organic and Hybrid Light Emitting Materials and Devices XXIX

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

**3–5 August 2025
San Diego, California, United States**

Sponsored and Published by
SPIE

Volume 13588

Proceedings of SPIE 0277-786X, V. 13588

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.

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 XXIX*, edited by Ji-Seon Kim, Tae-Woo Lee, Franky So, Proc. of SPIE 13588, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510690844

ISBN: 9781510690851 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2025 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.

**SPIE. DIGITAL
LIBRARY**

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*

PHYSICS OF ORGANIC LIGHT-EMITTING MATERIALS

- 13588 02 **Prediction of electronic transport properties of amorphous organic semiconductors for organic light-emitting diodes using quantum chemical calculation (Invited Paper)**
[13588-17]

QUANTUM DOT LIGHT EMITTING DIODES AND DISPLAYS

- 13588 03 **Advancements in high-resolution OLED microdisplays and QD applications (Invited Paper)**
[13588-22]

PEROVSKITE AND QUANTUM DOT MATERIALS AND DEVICES

- 13588 04 **Understanding perovskite nanocrystal growth using in situ spectroscopies (Invited Paper)**
[13588-40]
- 13588 05 **Enhanced performance of quantum dot light-emitting diodes through versatile applications of metal oxide nanoparticles (Invited Paper)** [13588-41]

ORGANIC, INORGANIC LIGHT EMITTING MATERIALS AND DEVICES

- 13588 06 **Tri-luminescent carbene gold(I) acetylide complex** [13588-49]

POSTER SESSION

- 13588 07 **Zinc precursor strategy for tailoring the optical performance of CuInS₂-based quantum dots**
[13588-52]
- 13588 08 **Synergistic optimization of emitting dipole orientation with platinum-based phosphorescent sensitizers and boron multiresonance fluorescent emitters for high-performance phosphor-sensitized fluorescent OLEDs** [13588-54]
- 13588 09 **Analyzing charge transport and emission process in OLEDs through transient electroluminescence** [13588-55]
- 13588 0A **Enhancing OLED microdisplay performance through combined microcavity engineering and color filter tuning** [13588-60]

- 13588 0B **Development of D-A-A' fluorescent emitters for efficient deep-red and near-infrared organic light-emitting diodes** [13588-61]
- 13588 0C **Green synthesis of highly emissive benzothiadiazole derivatives and their EL applications** [13588-62]
- 13588 0D **Effects of light quality on the ex-vitro growth and development of *Cinchona officinalis*** [13588-68]