

PROCEEDINGS OF SPIE

Organic, Hybrid, and Perovskite Photovoltaics XXVI

**Gang Li
Natalie Stingelin
Hyun Suk Jung
Tse Nga Ng
Fei Huang**
Editors

**5–7 August 2025
San Diego, California, United States**

Sponsored by
SPIE

Cosponsored by
Enli Technology Co., Ltd. (Taiwan)

Published by
SPIE

Volume 13589

Proceedings of SPIE 0277-786X, V. 13589

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, Hybrid, and Perovskite Photovoltaics XXVI*, edited by Gang Li, Natalie Stingelin, Hyun Suk Jung, Tse Nga Ng, Fei Huang, Proc. of SPIE 13589, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510690868

ISBN: 9781510690875 (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*

PEROVSKITE-BASED MATERIALS: FUNDAMENTALS AND APPLICATIONS: JOINT SESSION WITH CONFERENCES 13589 AND 13593

- 13589 02 **Mapping charge carrier distributions and energy loss in perovskite devices (Invited Paper)**
[13589-3]

NOVEL ORGANIC MATERIALS: DESIGN, SYNTHESIS, STRUCTURE CONTROL, AND DEVICE ENGINEERING

- 13589 03 **Organic photomultiplication photodetectors exhibiting bias-dependent switchable operations between broadband and narrowband responses (Invited Paper)** [13589-7]

INORGANIC/ORGANIC HYBRID MATERIALS: DESIGN, SYNTHESIS AND GROWTH, AND DEVICE ENGINEERING

- 13589 04 **Host-sensitized Mn²⁺ doping for broadband luminescence from low-dimensional organic-inorganic hybrid cadmium chlorides (Invited Paper)** [13589-14]

ORGANIC AND INORGANIC/ORGANIC OPTOELECTRONIC DEVICES: FUNDAMENTALS

- 13589 05 **Interactions with ionizing radiation and conducting polymers** [13589-37]

ORGANIC MATERIALS: SYNTHESIS AND STRUCTURE-PROPERTY INTERRELATION

- 13589 06 **Thermal behavior of semiconducting polymer assembly using multiscale modeling approach (Invited Paper)** [13589-39]

POSTER SESSION

- 13589 08 **Dynamics of ion migration in hybrid halide perovskite thin films grown by EB-PVD for photonics applications** [13589-44]
- 13589 09 **Accelerating halide perovskite discovery via high-throughput synthesis and automated closed-loop experimentation** [13589-47]
- 13589 0A **Study of the front-textured interface of hybrid heterojunction PEDOT:PSS/c-Si for solar cell applications** [13589-48]

- 13589 0B **Determination of diffusion length in multicationic perovskite thin films via photo-EMF running grating technique** [13589-49]
- 13589 0C **Influence of humidity and protective encapsulation on ionic movement in MAPI films** [13589-50]
- 13589 0D **Impact of iodine vapor on ionic response of MAPbI₃ perovskite films** [13589-51]
- 13589 0E **Optimization of frontal interface and device performance in FZO/NiO/MAPbI₃/ZnO/Ag perovskite solar cells: a combined optical and electrical simulation study** [13589-52]
- 13589 0F **Charge transport layer engineering for high-efficiency Cs₂TiI₆-based lead-free perovskite solar cells** [13589-53]
- 13589 0G **Effect of indolocarbazole-based conjugated small molecular electrolytes on the spontaneous formation of electron transport layer in organic solar cells** [13589-55]