

PROCEEDINGS OF SPIE

Organic Photovoltaics XVI

Zakya H. Kafafi
Paul A. Lane
Ifor D. W. Samuel
Editors

10–13 August 2015
San Diego, California, United States

Sponsored by
SPIE

Cosponsored by
Raynergy Tek Incorporation (Taiwan)

Published by
SPIE

Volume 9567

Proceedings of SPIE 0277-786X, V. 9567

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 Photovoltaics XVI*, edited by Zakya H. Kafafi, Paul A. Lane, Ifor D. W. Samuel, Proceedings of SPIE Vol. 9567 (SPIE, Bellingham, WA, 2015) Six-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781628417333

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2015, Society of Photo-Optical Instrumentation Engineers.

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 copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online 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. The CCC fee code is 0277-786X/15/\$18.00.

Printed in the United States of America Vm7 i ffUb '5gg: WJUH g' bWzi bXYf`jW'bg' Zca 'GD-9.

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

SPIE. DIGITAL LIBRARY

SPIDigitalLibrary.org

Paper Numbering: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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 six-digit CID article numbering system structured as follows:

- The first four 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	<i>Authors</i>
vii	<i>Conference Committee</i>

PHOTOPHYSICS OF ORGANIC SEMICONDUCTORS WITH PHOTOVOLTAIC APPLICATIONS

9567 0C	The effect of 2D-Langevin and trap-assisted recombination on the open circuit voltage in organic solar cells [9567-15]
---------	---

APPLICATIONS OF NANOPHOTONICS

9567 0H	Nano-photonic organic solar cell architecture for advanced light management utilizing dual photonic crystals (Invited Paper) [9567-11]
---------	---

PEROVSKITE SOLAR CELLS: JOINT SESSION WITH CONFERENCES 9549 AND 9567

9567 0L	Hysteresis-free, stable and efficient perovskite solar cells achieved by vacuum-treated thermal annealing of CH₃NH₃PbI₃ [9567-21]
---------	---

CHARGE TRANSFER STATES AND PROCESSES

9567 0M	Charge generation in organic solar cell materials studied by terahertz spectroscopy (Invited Paper) [9567-22]
9567 0N	On the relation between local and charge-transfer exciton binding energies in organic photovoltaic materials [9567-23]

ADVANCES IN ORGANIC SOLAR CELLS AND DETECTORS

9567 0W	Design of low band gap small molecules with alkyldicyanovinyl acceptor and different donor groups for efficient bulk heterojunction organic solar cells [9567-32]
---------	--

MORPHOLOGY AND PROCESSING OF ORGANIC SOLAR CELLS

9567 0X	The effect of thermal annealing on additive migration to the organic/metal interface in OPVs (Invited Paper) [9567-33]
9567 12	Ultrashort-pulsed laser processing and solution based coating in roll-to-roll manufacturing of organic photovoltaics [9567-38]

POSTER SESSION

- 9567 1D **Interface trap density effect on efficiency of fullerene organic Schottky diode** [9567-49]
- 9567 1F **Verification of effect of electric field on electron transport in TiO₂ electrode** [9567-51]
- 9567 1L **Time-resolved terahertz spectroscopy of electrically conductive metal-organic frameworks doped with redox active species** [9567-57]
- 9567 1Y **Multiscale analysis of the effect of micro-phase separation on the charge transfer at the PEDOT:PSS and P3HT:PCBM layer interface** [9567-74]
- 9567 24 **Study of PEDOT: PSS and BCP thicknesses effect on SubPc/C₆₀ organic solar cell efficiency** [9567-81]