PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 9942

, "Front Matter: Volume 9942," Proc. SPIE 9942, Organic Photovoltaics XVII, 994201 (22 November 2016); doi: 10.1117/12.2262230

SPIE.

Event: SPIE Organic Photonics + Electronics, 2016, San Diego, California, United States

PROCEEDINGS OF SPIE

Organic Photovoltaics XVII

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

29 August–1 September 2016
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 9942

Proceedings of SPIE 0277-786X, V. 9942

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

Organic Photovoltaics XVII, edited by Zakya H. Kafafi, Paul A. Lane, Ifor D. W. Samuel,
Proc. of SPIE Vol. 9942, 994201 · © 2016 SPIE · CCC code: 0277-786X/16/\$18
doi: 10.1117/12.2262230

Proc. of SPIE Vol. 9942 994201-1

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 this book:

Author(s), "Title of Paper," in *Organic Photovoltaics XVII*, edited by Zakya H. Kafafi, Paul A. Lane, Ifor D. W. Samuel, Proceedings of SPIE Vol. 9942 (SPIE, Bellingham, WA, 2016) Six digit article CID Number.

ISSN: 0277-786X

ISSN: 1996-786X (electronic)

ISBN: 9781510602755

ISBN: 9781510602762 (electronic)

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 © 2016, 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/16/\$18.00.

Printed in the United States of America.

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

SPIE. DIGITAL LIBRARY
SPIEDigitalLibrary.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>
ix	<i>Introduction</i>

KEYNOTE SESSION ON ORGANIC PHOTOVOLTAICS

9942 03	High-performance integrated perovskite and organic solar cells with efficient near-infrared harvesting (Keynote Paper) [9942-1]
---------	--

CHARGE TRANSFER AND TRANSPORT I: JOINT SESSION WITH CONFERENCES 9923 AND 9942

9942 0D	Comparing morphology in dip-coated and spin-coated polyfluorene:fullerene films [9942-11]
---------	--

DEVELOPMENT OF NEW MATERIALS FOR ORGANIC PHOTOVOLTAICS

9942 0O	Crosslinkable low bandgap polymers for organic solar cells [9942-23]
---------	---

ORGANIC PHOTOVOLTAIC DEVICE ARCHITECTURES

9942 0R	Inkjet printing of semitransparent electrodes for photovoltaic applications [9942-26]
---------	--

PHOTOPHYSICS AND PHOTONICS FOR ORGANIC PHOTOVOLTAICS

9942 0X	Structural modifications to enhance the exciton diffusion in bilayer porphyrin fullerene thin films (Invited Paper) [9942-31]
9942 10	Monolayer organic field effect phototransistors: photophysical characterization and modeling [9942-34]
9942 11	Light trapping for flexible organic photovoltaics [9942-35]

POSTER SESSION

- 9942 18 **Study of the interaction of PSS-PEDOT, PCBM and Spiro-OMeTAD with MAPbI₃ crystal facets using molecular dynamics simulation** [9942-46]
- 9942 1B **Twenty natural organic pigments for application in dye sensitized solar cells** [9942-50]
- 9942 1E **Bridge effects on light harvesting of a DBfA type polymer system** [9942-53]

Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Agina, Elena V., 10	Van fraeyenhoven, Paulien, 0D
Andersén, Mikael, 0D	van Stam, Jan, 0D
Anisimov, Daniil S., 10	Vandewal, Koen, 11
Bakulin, Artem A., 10	Walter, Michael G., 0X
Berger, Jana, 11	Will, Paul-Anton, 11
Borshchev, Oleg V., 10	Zhang, Jiangbin, 10
Brabec, Christoph J., 0R	
Bruevich, Vladimir V., 10	
Castillo, D., 1B	
Devan, Joshua, 1E	
Egelhaaf, Hans-Joachim, 0R	
Espinosa Tapia, S., 1B	
Fecher, Frank W., 0R	
Fery, Andreas, 11	
Fischer, Florian, 0O	
Gavrilenko, Alexander V., 1E	
Gavrilenko, Vladimir, 1E	
Glatz, Bernhard, 11	
Guaman, A., 1B	
Hahn, Tobias, 0O	
Hasib, Muhammad, 1E	
Huang, Min, 18	
Kahle, Frank-Julian, 0O	
Kaushal, Meesha, 0X	
Kim, Junghwan, 03	
Knauer, Philipp, 0O	
Köhler, Anna, 0O	
Lasagni, Andrés Fabián, 11	
Lee, Kwanghee, 03	
Leo, Karl, 11	
Lucera, Luca, 0R	
Maier, Eugen, 0R	
Maisch, Philipp, 0R	
Moons, Ellen, 0D	
Müller-Meskamp, Lars, 11	
Obregón Calderón, D., 1B	
Paraschuk, Dmitri Yu., 10	
Park, Yoonseok, 11	
Ponomarenko, Sergei, 10	
Saller, Christina, 0O	
Sánchez Juárez, A., 1B	
Scheiber, Horst, 0R	
Soldera, Marcos, 11	
Srinivasamurthy, Praveen, 0X	
Strohriegel, Peter, 0O	
Sun, Sam-Shajing, 1E	
Tam, Kai C., 0R	
Taretto, Kurt, 11	
Trukhanov, Vasily A., 10	

Conference Committee

Symposium Chairs

Zakya H. Kafafi, Lehigh University (United States)
Luisa Torsi, Università degli Studi di Bari (Italy)

Conference Chair:

Zakya H. Kafafi, Lehigh University (United States)

Conference Co-chairs:

Paul A. Lane, U.S. Naval Research Laboratory (United States)
Ifor D. W. Samuel, University of St. Andrews (United Kingdom)

Conference Program Committee

Natalie Banerji, Universitet de Fribourg (Switzerland)
Pierre M. Beaujuge, King Abdullah University of Science and Technology (Saudi Arabia)
Hendrik Bolink, Universidad de València (Spain)
Paul L. Burn, The University of Queensland (Australia)
Antonio F. Facchetti, Polyera Corporation (United States)
Bernard Kippelen, Georgia Institute of Technology (United States)
Gang Li, University of California, Los Angeles (United States)
Thuc-Quyen Nguyen, University of California, Santa Barbara (United States)
Ana Flavia Nogueira, Universidade Estadual de Campinas (Brazil)
Barry P. Rand, Princeton University (United States)
Sang Il Seok, Korea Research Institute of Chemical Technology (Korea, Republic of)
Sean E. Shaheen, University of Colorado Boulder (United States)
Natalie Stingelin-Stutzmann, Georgia Institute of Technology (United States)

Session Chairs

- 1 Keynote Session on Organic Photovoltaics
Zakya H. Kafafi, Lehigh University (United States)
- 2 Perovskite-based Solar Cells I
Ifor D. W. Samuel, University of St. Andrews (United Kingdom)

- 3 Charge Transfer and Transport I: Joint Session with Conferences 9923 and 9942
Demetra Tsokkou, Universitet de Fribourg (Switzerland)
- 4 Perovskite-based Solar Cells II: Joint Session with Conferences 9923 and 9942
Artem A. Bakulin, Imperial College London (United Kingdom)
- 5 Perovskite-based Solar Cells III: Joint Session with Conferences 9923 and 9942
Ifor D. W. Samuel, University of St. Andrews (United Kingdom)
- 6 Charge Transfer and Transport II: Joint Session with Conferences 9923 and 9942
Artem A. Bakulin, Imperial College London (United Kingdom)
- 7 Development of New Materials for Organic Photovoltaics
Paul L. Burn, The University of Queensland (Australia)
- 8 Organic Photovoltaic Device Architectures
Gang Li, University of California, Los Angeles (United States)
- 9 Photophysics and Photonics for Organic Photovoltaics
Sean E. Shaheen, University of Colorado Boulder (United States)

Introduction

We are pleased to present the proceedings of the Seventeenth Conference on Organic Photovoltaic Devices. The conference consisted of fifty-two papers presented across ten sessions, including a full day of joint sessions with the conference on the Physical Chemistry of Interfaces. The conference opened with a keynote talk by Professor Kwanghee Lee on high performance organic and perovskite photovoltaic devices. All of the manuscripts in this volume have been refereed. We would like to thank the authors for their contributions to this volume and the referees for taking the time to insure the high quality of the contributions. The contributions of the organizing committee, session chairs, and SPIE staff are gratefully acknowledged.

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