Front Matter: Volume 10363
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 these proceedings:


ISSN: 0277-786X
ISSN: 1996-756X (electronic)
ISBN: 9781510611832

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 © 2017, 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/17/$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 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

<table>
<thead>
<tr>
<th>Conference</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>vi</td>
<td>Authors</td>
<td></td>
</tr>
<tr>
<td>vii</td>
<td>Conference Committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CHARGE AND ENERGY TRANSFER DYNAMICS IN ORGANIC PHOTOVOLTAICS: JOINT SESSION WITH CONFERENCES 10348 AND 10363</strong></td>
<td></td>
</tr>
<tr>
<td>10363 07</td>
<td>Triplet energy transfer and triplet exciton recycling in singlet fission sensitized organic heterojunctions [10363-3]</td>
<td></td>
</tr>
<tr>
<td>10363 08</td>
<td>Ultrast fast terahertz snapshots of excitonic Rydberg states and electronic coherence in an organometal halide perovskite CH3NH3PbI3 [10363-4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TOWARDS COMMERCIAL PRODUCTION OF SOLAR MODULES</strong></td>
<td></td>
</tr>
<tr>
<td>10363 0E</td>
<td>Up-scaling perovskite solar cell manufacturing from sheet-to-sheet to roll-to-roll: challenges and solutions [10363-10]</td>
<td></td>
</tr>
<tr>
<td>10363 0F</td>
<td>Roll-to-roll production of organic solar cells (Invited Paper) [10363-11]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>HIGH EFFICIENCY PEROVSKITE SOLAR CELLS</strong></td>
<td></td>
</tr>
<tr>
<td>10363 0Q</td>
<td>Color tunable hybrid light-emitting diodes based on perovskite quantum dot/conjugated polymer [10363-22]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>INFLUENCE OF STRUCTURE AND MORPHOLOGY IN ORGANIC PHOTOVOLTAICS</strong></td>
<td></td>
</tr>
<tr>
<td>10363 1K</td>
<td>Innovative architecture design for high performance organic and hybrid multi-junction solar cells [10363-50]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>POSTER SESSION</strong></td>
<td></td>
</tr>
<tr>
<td>10363 2D</td>
<td>Optical excitations dynamics at hetero-interfaces fullerene/quantum dots [10363-81]</td>
<td></td>
</tr>
<tr>
<td>10363 2K</td>
<td>Plasmon enhanced power conversion efficiency in inverted bulk heterojunction organic solar cell [10363-88]</td>
<td></td>
</tr>
<tr>
<td>10363 2Q</td>
<td>Multiscale study of the formation of the PFI:PSS:PEDOT super structure and its HOMO-LUMO energies [10363-95]</td>
<td></td>
</tr>
</tbody>
</table>
Effect of core modification in star-shaped donor-acceptor oligomers on physical properties and photovoltaic performance [10363-96]

Hybrid solar cell based on a-Si/polymer flat heterojunction on flexible substrates [10363-103]

Ultrashort pulsed laser-dicing of silicon wafers for the decollating of conventional and hybrid solar cells [10363-106]

Analysis of the aging/stability process of organic solar cells based on PTB7: [70]PCBM and an alternative free-vacuum deposited cathode: the effect of active layer scaling [10363-110]

Effect of immerse an organic layer in isopropyl alcohol on characteristics of hybrid photovoltaic structures [10363-129]
Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five 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.

Aernouts, Tom, 0E
Andrissen, Ronn, 0E
Atvars, Teresa D. Z., 0Q
Barreiro-Argüelles, Denisse, 33
Bonato, Luiz Gustavo, 0Q
Bozio, Renato, 2D
Brabec, Christoph J., 1K
Chvalun, Sergei N., 2R
Cosme, I., 2W, 3G
Crawford, Ross, 07
de Morais, AndrÉia, 0Q
de Vries, Ike, 0E
Di Giacomo, Francesco, 0E
Dmitryakov, Petr V., 2R
Fledderus, Henri, 0E
Forneroli, C., 2Z
Franco, Lorenzo, 2D
Freitas, Jillian N., 0Q
Galagan, Yulia, 0E
Germino, JosÉ C., 0Q
Gillner, A., 2Z
Gorter, Harrie, 0E
Groen, Pim, 0E
Hamid, Tausuva, 07
Ho, Kai-Ming, 08
Hördemann, C., 2Z
Huang, Min, 2Q
Itzmoyotl, A., 3G
Kirchner, Gerwin, 0E
Kosarev, A., 2W, 3G
Li, Ning, 1K
Lilka, Herbert, 0E
Liu, Zhaoyu, 08
Luo, Liang, 08
Luponosov, Yuriy N., 2R
Maldonado, JosÉ-Luis L., 33
Mansurova, S., 2W, 3G
Martinez Mateo, H. E., 2W
Men, Long, 08
Meneses-Nava, Marco-Antonio, 33
Mohan, Minu, 2K
Mudryk, Yaroslav, 08
Namboothiry, Manoj A. G., 2K
Nogueira, Ana F., 0Q
Olivares Vargas, A. J., 2W, 3G
Ospina Ocampo, C. A., 2W
Pandey, Ajay K., 07
Paraschuk, Dmitriy Yu., 2R
Park, Joong M., 08
Perakis, Illias E., 08
Peregudova, Svetlana M., 2R
Pérez-Gutiérrez, Enrique, 33
Pfeiffer, M., 0F
Ponomarenko, Sergey A., 2R
Privitera, Alberto, 2D
Ramkumar, S., 2K
Ramos-Ortiz, Gabriel, 33
Righetto, Marcello, 2D
Roberts, Jonathan, 07
Romero-Borja, Daniel, 33
Santiago, Glauco M., 0Q
Shanmugam, Santhosh, 0E
Shinar, Joseph, 08
Shinar, Ruth, 08
Solodukhin, Alexander N., 2R
Spyropoulos, George D., 1K
Trukhanov, Vasily A., 2R
Uhrich, C., 0F
van den Bruele, Fieke, 0E
Veenstra, Sjoerd, 0E
Vela, Javier, 08
Wang, Jigang, 08
Weiß, A., 0F
Yambem, Soniya D., 07
Yao, Yongxin, 08
Yassitepe, Emre, 0Q
Zhao, Xin, 08
Conference Committee

Symposium Chairs

Zakya H. Kafafi, Lehigh University (United States)
Ifor D. W. Samuel, University of St. Andrews (United Kingdom)

Conference Chair

Zakya H. Kafafi, Lehigh University (United States)

Conference Co-chairs

Paul A. Lane, U.S. Naval Research Laboratory (United States)
Kwanghee Lee, Gwangju Institute of Science and Technology (Korea, Republic of)

Conference Program Committee

Pierre M. Beaujuge, King Abdullah University of Science and Technology (Saudi Arabia)
Hendrik Bolink, Universitat de València (Spain)
Paul L. Burn, The University of Queensland (Australia)
David S. Ginger, University of Washington (United States)
Fei Huang, South China University of Technology (China)
Gang Li, The Hong Kong Polytechnic University (United States)
Thuc-Quyen Nguyen, University of California, Santa Barbara (United States)
Ana Flavia Nogueira, Universidade Estadual de Campinas (Brazil)
Hideo Ohkita, Kyoto University (Japan)
Nam-Gyu Park, Sungkyunkwan University (Korea, Republic of)
Barry P. Rand, Princeton University (United States)
Ifor D. W. Samuel, University of St. Andrews (United Kingdom)
Natalie Stingelin-Stutzmann, Georgia Institute of Technology (United States)

Session Chairs

1 Structure and Morphology in Organic and Hybrid Photovoltaics: Joint Session with Conferences 10348 and 10363
   Hugo A. Bronstein, University College London (United Kingdom)

2 Charge and Energy Transfer Dynamics in Organic Photovoltaics: Joint Session with Conferences 10348 and 10363
   Felix Deschler, University of Cambridge (United Kingdom)
3 Keynote Session: Advances in Organic, Hybrid, and Perovskite Photovoltaics
Kwanghee Lee, Gwangju Institute of Science and Technology (Korea, Republic of)

4 Towards Commercial Production of Solar Modules
Ifor D. W. Samuel, University of St. Andrews (United Kingdom)

5 Organic Photovoltaics: Beyond Fullerenes
Ergang Wang, Chalmers University of Technology (Sweden)

6 High Efficiency Perovskite Solar Cells
David G. Lidzey, The University of Sheffield (United Kingdom)

7 Development of Electron Donors for Organic Photovoltaics
Paul L. Burn, The University of Queensland (Australia)

8 Interfaces in Perovskite Photovoltaics
Paul Meredith, Swansea University (United Kingdom)

9 Challenges to Improving the Efficiency of Organic Photovoltaics
Gang Li, The Hong Kong Polytechnic University (United States)

10 Growth and Characterization of Perovskite Films
David S. Ginger, University of Washington (United States)

11 Influence of Structure and Morphology in Organic Photovoltaics
Ana Flavia Nogueira, Universidade Estadual de Campinas (Brazil)

12 Towards Efficient and Stable Organic Photovoltaics
Paul A. Lane, U.S. Naval Research Laboratory (United States)