

**MATERIALS RESEARCH SOCIETY**  
**SYMPOSIUM PROCEEDINGS VOLUME 1013**

# **Organic and Nanoparticle Hybrid Photovoltaic Devices**

April 9-13, 2007  
San Francisco, California, USA

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

ISBN: 978-1-60560-444-2

Some format issues inherent in the e-media version may also appear in this print version.

Copyright (2007) by the Materials Research Society.  
All rights reserved.

For permission requests, please contact the Materials Research Society at the address below.

Materials Research Society  
Proceedings  
506 Keystone Dr.  
Warrendale, PA 15086  
Phone: 724-779-3004 x 531  
Fax: 724-779-4396  
[eproceedings@mrs.org](mailto:eproceedings@mrs.org)

## TABLE OF CONTENTS

<b>P3HT: PCBM Bulk Heterojunction Solar Cells: Morphological and Electrical Characterization and Performance Optimization</b> .....	1
<i>T. Aernouts, P. Vanlaeke, I. Haeldermans, J. D'Haen, P. Heremans, J. Poortmans, J. V. Manca</i>	
<b>Degradation Kinetics of Polymer: Fullerene Bulk Heterojunction Solar Cells</b> .....	8
<i>S. Bertho, W. Moons, G. Janssen, I. Haeldermans, A. Swinnen, L. Lutsen, J. D'Haen, E. Goovaerts, J. Manca, D. Vanderzande</i>	
<b>ITO-Based Cathode for Application in Semitransparent Organic Photovoltaic Cells</b> .....	15
<i>G. M. Ng, E. L. Kietzke, T. Kietzke, L. W. Tan, P. K. Liew, F. Zhu</i>	
<b>Synthesis and Characterization of Electropolymerized Porphyrin Nanofibers</b> .....	25
<i>M. G. Walter, C. C. Wamsler</i>	
<b>Electrical and Photoelectrical Properties of Nanostructured ZnO Thin Films for Photovoltaic Applications</b> .....	31
<i>L. Ion, C. Tazlaoanu, G. Socol, L. Magherusan, I. Enculescu, D. Bazavan, I. Mihailescu, S. Antohe</i>	
<b>Towards 'Green' Solid State Polythiophene Solar Cells using a Fully Water Based Preparation Method</b> .....	37
<i>I. Haeldermans, I. Truijen, K. Vandewal, W. Moons, M. K. Van Bael, J. D'Haen, J. Manca, J. Mullens</i>	
<b>A Novel Efficient, Iodide-Free Redox Mediator for Dye-Sensitized Solar Cells</b> .....	44
<i>Z. Zhang, P. C. Chen, S. M. Zakeeruddin, J. E. Moser, M. Gratzel</i>	
<b>A Potential of Large Scale of Dye Sensitized Solar Cells using Metallic Titanium Sheet as the Substrate for Photoelectrode</b> .....	49
<i>K. Onoda, S. Ngamsinlapasathian, T. Fujieda, S. Yoshikawa</i>	
<b>Template-Assisted Large Scale Vertical Implantation of Crystalline Titania Nanotube Arrays</b> .....	56
<i>S. V. Khvan, S. S. Lee, J. Kim</i>	
<b>Effect of Surface Modification by Solvent Exchange on Hybrid Bulk Heterojunction Solar Cell Performance</b> .....	62
<i>M. L. Monroe, Y. W. Kim, N. T. N. Truong, Y. H. Na, J. Seol, T. J. Anderson, C. Park</i>	
<b>Investigation of Device Optimization of Organic Bi-layer Solar Cells</b> .....	66
<i>T. W. Kim, M. L. Monroe, Jiyoun Seol, Jaeseung Seol, D. H. Kim, T. W. Koo, T. J. Anderson, C. Park</i>	
<b>Colloidal InAs Quantum Dots for Polymer Photovoltaics</b> .....	70
<i>A. Anctil, B. Landi, J. Worman, R. Raffaele</i>	
<b>Author Index</b>	