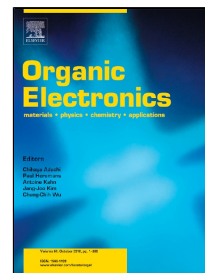


# Accepted Manuscript

Non-ionic Surfactant-Novel Agents to Realize High Efficiency Non-fullerene Opaque and Semitransparent Organic Solar Cells with Enhanced Stability

Xinrui Li, Xiaoyang Du, Hui Lin, Lijuan Li, Xiao Kong, Caijun Zheng, Silu Tao, Xiaohong Zhang



PII: S1566-1199(18)30416-6

DOI: 10.1016/j.orgel.2018.08.012

Reference: ORGELE 4826

To appear in: *Organic Electronics*

Received Date: 14 July 2018

Accepted Date: 08 August 2018

Please cite this article as: Xinrui Li, Xiaoyang Du, Hui Lin, Lijuan Li, Xiao Kong, Caijun Zheng, Silu Tao, Xiaohong Zhang, Non-ionic Surfactant-Novel Agents to Realize High Efficiency Non-fullerene Opaque and Semitransparent Organic Solar Cells with Enhanced Stability, *Organic Electronics* (2018), doi: 10.1016/j.orgel.2018.08.012

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Non-ionic Surfactant-Novel Agents to Realize High Efficiency Non-  
fullerene Opaque and Semitransparent Organic Solar Cells with  
Enhanced Stability

*Xinrui Li,<sup>a</sup> Xiaoyang Du,<sup>a</sup> Hui Lin,<sup>\*a</sup> Lijuan Li,<sup>a</sup> Xiao Kong,<sup>a</sup> Caijun Zheng,<sup>a</sup> Silu Tao,<sup>\*a</sup> and  
Xiaohong Zhang<sup>b</sup>*

*<sup>a</sup>School of Optoelectronic Science and Engineering, University of Electronic Science and  
Technology of China (UESTC), Chengdu 610054, P. R. China*

*<sup>b</sup>Institute of Functional Nano & Soft Materials (FUNSOM), Soochow University, Suzhou 215123,  
P. R. China*

**Abstract:**

The strategy for introducing agents into active layer has been studied as an effective and simple method for optimizing the film morphology and enhancing the performance of organic solar cells (OSCs). Whereas very few agents can be efficient used and make contribution in non-fullerene OSCs. In this work, two novel non-ionic surfactants 1, 8-Octanediol (ODO) and 1, 10-Decanediol (DDO) were introduced to realize high efficiency opaque and semitransparent non-fullerene OSCs for the first time. Doped with an appropriate amount of ODO and DDO in PTB7-Th: ITIC system, highly efficient opaque solar cells have been achieved with a power conversion efficiencies (PCE) of 10.28% and 9.59%, respectively, which exhibited a huge improvement compared with reference cells (PCE of 7.84%). A performance increase is owing to the improvements in short-circuit current density ( $J_{SC}$ ) and fill factor (FF) via the optimization of the film morphology and the enhanced crystallinity of polymer after adding the surfactant. By using a transparent electrode, the semitransparent OSC shows PCE of 7.74% with high average visible transmittance

Download English Version:

<https://daneshyari.com/en/article/7699846>

Download Persian Version:

<https://daneshyari.com/article/7699846>

[Daneshyari.com](https://daneshyari.com)