

Accepted Manuscript

Title: Tailoring the photophysical and photovoltaic properties of boron-difluorodipyrromethene dimers

Authors: Wen-Xu Liu, Jian-Nian Yao, Chuan-Lang Zhan

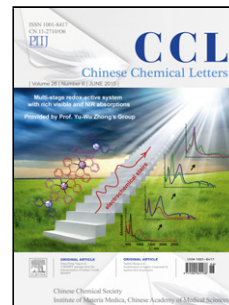
PII: S1001-8417(17)30035-9
DOI: <http://dx.doi.org/doi:10.1016/j.cclet.2017.01.013>
Reference: CCLET 3962

To appear in: *Chinese Chemical Letters*

Received date: 11-1-2017
Accepted date: 11-1-2017

Please cite this article as: Wen-Xu Liu, Jian-Nian Yao, Chuan-Lang Zhan, Tailoring the photophysical and photovoltaic properties of boron-difluorodipyrromethene dimers, *Chinese Chemical Letters* <http://dx.doi.org/10.1016/j.cclet.2017.01.013>

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.



Original article

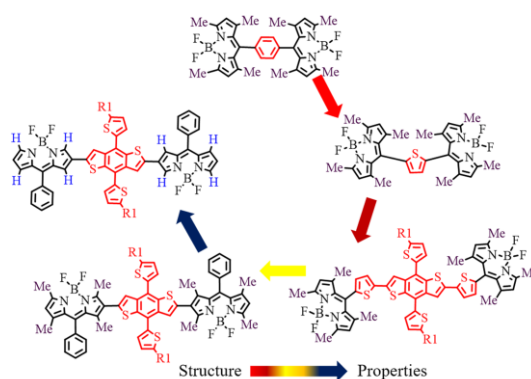
Tailoring the photophysical and photovoltaic properties of boron-difluorodipyrromethene dimers

Wen-Xu Liu, Jian-Nian Yao, Chuan-Lang Zhan*

Beijing National Laboratory of Molecular Science, CAS Key Laboratory of Photochemistry, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190 China

* Corresponding author.
E-mail address: clzhan@iccas.ac.cn

Graphical abstract



The photophysical and photovoltaic properties of BODIPY based dimers can be modulated effectively by facile structural modifications.

ABSTRACT

Five boron-difluorodipyrromethene (BODIPY) dimers have been designed and synthesized successfully via acid-catalysed condensation and Pd-catalysed cross-coupling reactions. The structural modification, including verifying the structures of the π -bridges, altering the positions the bridges link (*meso*- or β - positions), and regulating the molecular planarity, can modulate the photophysical properties and the aggregation behaviors of the five dimers efficiently. Solution-processed organic solar cells were fabricated to evaluate the photovoltaic properties of these molecules further either as acceptors or donors. When using as nonfullerene acceptor and blended with the polymer donor of PTB7, an open-circuit voltaic (V_{oc}) of 1.12 and 1.08 V was achieved from the thiophene and benzodithiophene bridged BODIPY dimers, respectively. This V_{oc} is among the top values achieved from the non-fullerene organic solar cells so far.

Keywords:

BODIPY
Nonfullerene acceptor
Small molecule donor
Photovoltaic cell

Solution-processed

Download English Version:

<https://daneshyari.com/en/article/5143062>

Download Persian Version:

<https://daneshyari.com/article/5143062>

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