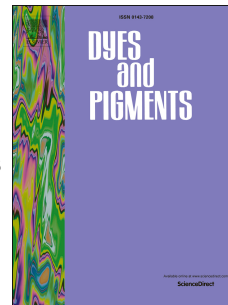


# Accepted Manuscript

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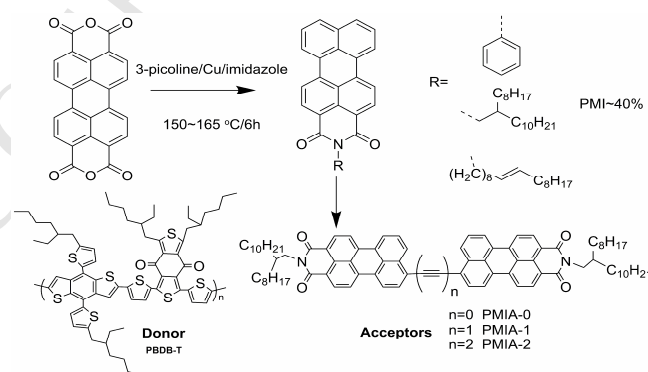
Ruiping Qin<sup>a,\*</sup>, Deen Guo<sup>a</sup>, Tullimilli Y. Gopalakrishna<sup>b</sup>, Guangwu Li<sup>b</sup>, Jien Yang<sup>a</sup>, Yurong Jiang<sup>a</sup>, Heng Ma<sup>a</sup>

<sup>a</sup> College of Physics & Materials Science, Henan Province Key Laboratory of Photovoltaic Materials, Henan Normal University, Xinxiang 453007, China.

<sup>b</sup> Department of Chemistry, National University of Singapore, 3 Science Drive 3, 117543, Singapore.

## ABSTRACT

Here, this study presents a simply synthesis proposal for perylene monoimides with traditional wet solution reaction in one step from commercially available perylene dianhydride and the moderate yield has been got. Their dimmer or ethynylene or butadiynylene bridged perylene derivatives were then developed. The work expanded the structural diversity of these dye molecules to a multifunctional class of n-type semiconductor materials. The high LUMO level (-3.83~-3.96 eV) reduced the energy loss by associating wide bandgap polymer refer to PC<sub>71</sub>BM (-4.04 eV). Using these compounds as non-fullerene electron acceptors constructs the inverted solar cells, the power conversion efficiency is up to 1.45% for wide band gap polymer donor with an ultrathin active layer thickness of 30 nm.



\* Corresponding author. E-mail address: qinruiping@163.com (Ruiping Qin)

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