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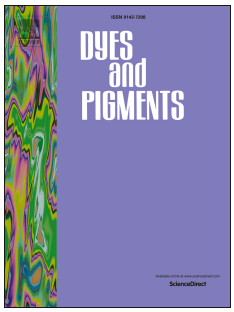

One step to perylene monoimides and derived alkynyl bridged photovoltaic acceptors

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One step to perylene monoimides and derived alkynyl bridged photovoltaic acceptors

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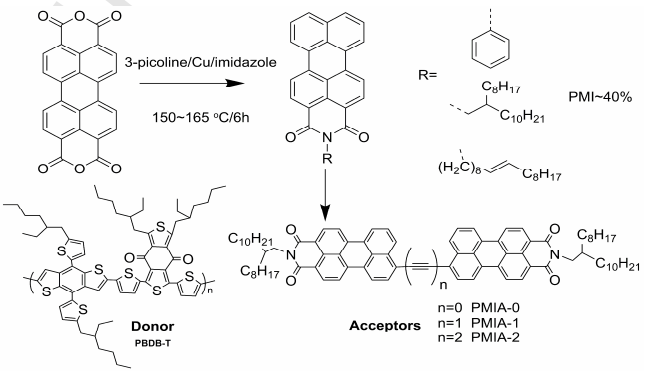
ABSTRACT

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 $PC_{71}BM$ (-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.



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