



Abstract:

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Phthalimide-thiophene small molecules as novel non-fullerene acceptors in organic photovoltaics

The premise of organic photovoltaics (OPVs) is based on economical synthesis and facile implementation onto various illuminated surfaces, utilizing scalable techniques such as roll-to-roll processing on flexible substrates and spray deposition. However, current state-of-the-art organic photovoltaic devices utilize fullerene derivatives as acceptor molecules, which are weak light absorbers, unstable in ambient conditions, and suffer from energy-intensive syntheses [1]. To overcome these deficiencies, our work focuses on cost-effective replacements for fullerene acceptors with tunable electronic and physical properties. Through a variety of characterization techniques and implementation in devices [2-3], we have demonstrated that phthalimide-thiophene-based small molecules can be tailored to fulfill these requirements, paving the way to affordable and flexible sustainable energy.