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EHF - OEO

Cause Study of the Low Fill Factor of Squaraine Based Solar Cells by Steady-State Methods

Organic solar cells whose active layer consists of a model squaraine donor blended with a fullerene acceptor are particularly interesting because they show absorption within the deep-red combined with a high open circuit voltage. Unfortunately, these devices suffer from a low fill factor [1]. To gain deeper understanding of the limiting factors we utilize steady-state current-voltage measurements to assess the electronic quality factor of devices with varying layer thickness by a recently described method [2]. In addition, we investigate the wavelength dependence of the loss mechanisms by voltage- and white-light-biased external quantum efficiency measurements.

[1] Scheunemann et al., Appl. Phys. Lett. 111 (2017) 183502.

[2] Kaienburg et al., Phys. Rev. Appl. 6 (2016) 024001.