Improving, characterizing and predicting the lifetime of organic photovoltaics - DTU Orbit (18/12/2018)

Improving, characterizing and predicting the lifetime of organic photovoltaics: Topical Review
This review summarizes the recent progress in the stability and lifetime of organic photovoltaics (OPVs). In particular, recently proposed solutions to failure mechanisms in different layers of the device stack are discussed comprising both structural and chemical modifications. Upscaling is additionally discussed from the perspective of stability presenting the challenges associated with device packaging and edge protection. An important part of device stability studies is the characterization, and this review provides a short overview of the most advanced techniques for stability characterization reported recently. Lifetime testing and determination is another challenge in the field of organic solar cells and the final sections of this review discuss the testing protocols as well as the generic marker for device lifetime and the methodology for comparing all the lifetime landmarks in one common diagram. These tools were used to determine the baselines for OPV lifetime tested under different ageing conditions. Finally, the current status of lifetime for organic solar cells is presented and predictions are made for progress in the near future.

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