
Efficiency and Lifetime of Small-Molecules OPV from Lab to Fab

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Abstract

For the success of organic photovoltaics (OPV) it is vital that all three aspects, price, efficiency and cost are addressed and mastered. However, what has to be considered as necessary depends on the field of application; for building integrated PV, for example, lamination in glass can lower the demands on water tolerance. On the other hand, the absolute lifetime demanded is generally larger than e.g. for automotive use. Hence, when investigating lab devices and as-manufactured foils, not only their lifetime in outdoor measurements but also the separate effect of each influence has to be investigated. We present the efficiency development and potential for multijunction solar cells under research as well as larger, flexible modules on PET. Furthermore, both lifetime data from outdoor measurements and standardized lab tests such as the dry and damp heat test are shown. Devices from all developmental stages are discussed, from lab-based single cell devices on glass to tandem modules from the roll-to-roll production.

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