

Performance and Lifetime of Tandem Organic Solar Cells

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Abstract : Multi-junction solar cell configurations, where two sub-cells with complementary absorption are stacked and connected in series, offer an exciting approach to tackle the single junction limitations of organic solar cells and improve their power conversion efficiency. However, the augmentation of the number of layers has, as a consequence, to increase the risk of reducing the lifetime of the cell due to the ageing phenomena present at the interfaces. In this work, we study the intrinsic degradation mechanisms, under continuous illumination AM1.5G, inert atmosphere and room temperature, in single and tandem organic solar cells using Impedance Spectroscopy, IV Curves, External Quantum Efficiency, Steady-State Photocurrent Grating, Scanning Kelvin Probe and UV-Visible light.

Keywords : single and tandem organic solar cells, intrinsic degradation mechanisms, characterization: SKP, EQE, SSPG, UV-Visible, Impedance Spectroscopy, optical simulation

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