



Effect of MoO₃ in the cathode buffer layer on the behaviour of layered organic solar cells

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Résumé en anglais	<p>The behaviour of small-molecule organic solar cells based on copper-phthalocyanine/fullerene with different cathode buffer layer is investigated as a function of air exposure duration. We present the study of the effect of MoO₃ on the properties of photovoltaic solar cells (OPVCs) when it is introduced in the cathode buffer layer (CBL). Photovoltaic performances were measured as a function of time of air exposure. During the first days of air exposure the efficiency of the OPVCs with MoO₃ in their CBL increases significantly, while it decreases immediately after air exposure in the case of reference OPVCs, i.e. without MoO₃ in the CBL. Nevertheless, the lifetime of the OPVCs with MoO₃ in their CBL is around 60 days, while it is only 10 days in the case of reference OPVCs. The initial increase of the OPVC with MoO₃ in their CBL is attributed to the slow decrease of the work function of MoO₃ due to progressive contamination. Then, the progressive degradation of the OPVCs efficiency is due water vapour and oxygen contamination of the organic layers. The use of a double CBL, Alq₃/MoO₃, allows to interrupt the growth of pinholes, defects and increases the path of permeating gas. Also it can prevent the contamination of the organic layer by Al. All this results in significant increase of the lifetime of the OPVCs.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua12245 [17]

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