



PEDOT/PSS POLYMER ANODE SIMULATION APPROACH OF THE ELECTRIC FIELD INSIDE ORGANIC SOLAR CELLS

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Abstract

In this paper, we report our results on the optical modelling of a multi-layer organic photovoltaic device, in which the incident light of sun is absorbed in the active layer. The influence of the optical parameters and thicknesses of different layers have been taken into account to improve the device performance. A composite of poly (2-methoxy-5-(20-ethylhexyloxy) -1, 4phenylenevinylene) (MEHPPV)/6, 6-phenylC61-butyric acid methyl ester (PCBM) blends are used as photo-active materials, sandwiched between a transparent Indium Tin Oxide (ITO)-electrode and metallic (Ca, Al, Ag) backside contacts. This study aims to show optical effects of an extra interfacial layer of poly (3, 4-ethylenedioxythiophene)/poly(styrene-sulfonate) (PEDOT/PSS) on top of the glass to be a future promising substitution for the ITO-electrode. Our objective is the study of the methods which make it possible the description of the electric field inside the organic solar cells described previously with different deposited layers to make a rigorous modelling of these devices. The basic criterion for optical optimization is to maximize the energy absorption in the active layer according to the distribution of electrical field on the device.

Keywords and phrases: organic solar cells, optical modelling, refractive index, polymer anode.

