

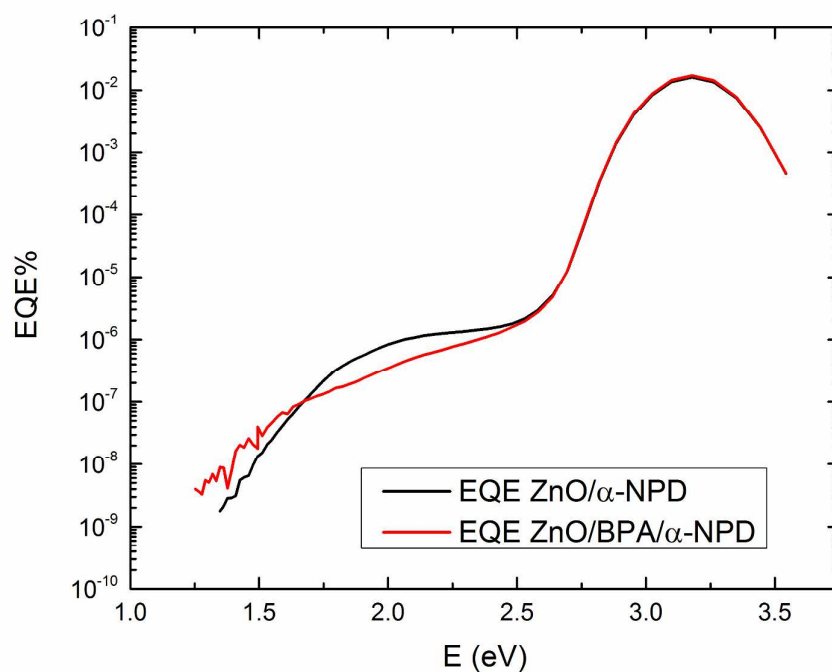
# Charge Transfer Absorption and Emission at ZnO/Organic Interfaces

*Fortunato Piersimoni,<sup>1</sup> Raphael Schlesinger,<sup>2</sup> Johannes Benduhn,<sup>3</sup> Donato Spoltore,<sup>3</sup>  
Sina Reiter,<sup>1</sup> Ilja Lange,<sup>1</sup> Norbert Koch,<sup>2</sup> Koen Vandewal,<sup>3</sup> Dieter Neher<sup>1</sup>*

<sup>1</sup>Institute of Physics and Astronomy, University of Potsdam, Karl-Liebknecht-Straße 24-25, 14476 Potsdam, Germany

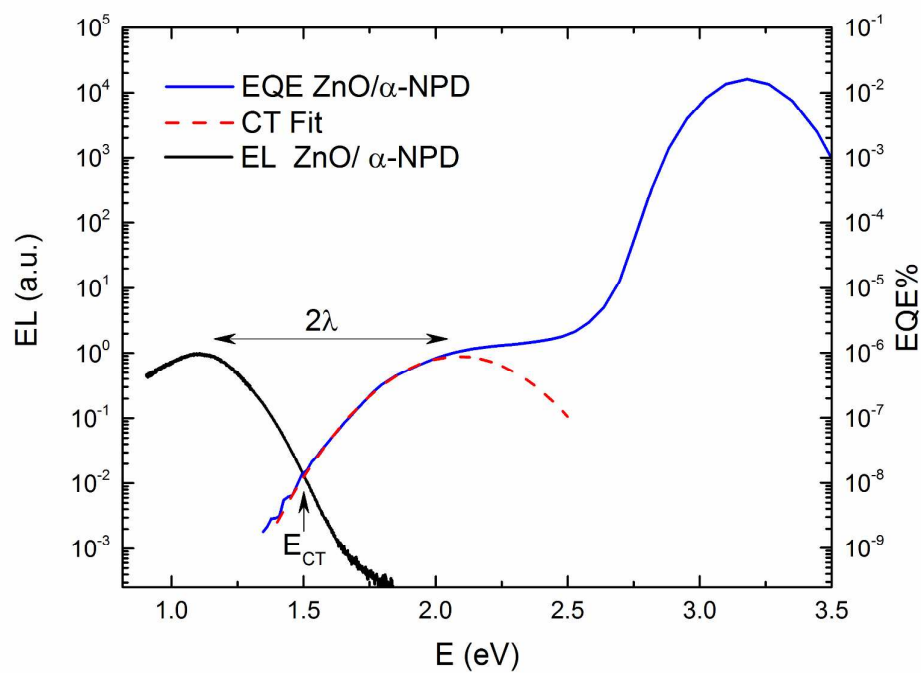
<sup>2</sup>Institut für Physik & IRIS, Adlershof Humboldt-Universität zu Berlin, Brook-Taylor-Straße 6, 12489 Berlin, Germany

<sup>3</sup>Institut für Angewandte Photophysik, Technische Universität Dresden, George-Bähr-Straße 1, 01069 Dresden, Germany

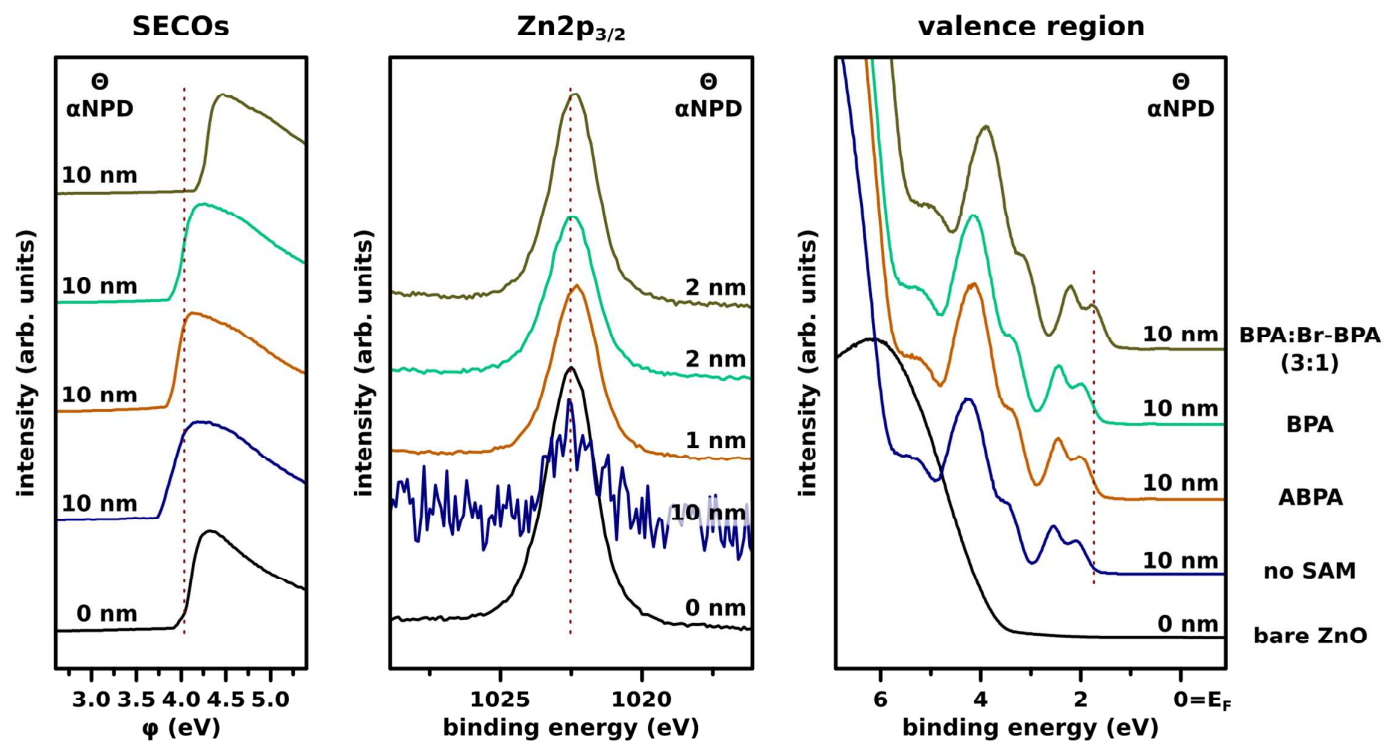


**Figure S1.** EQE spectra of devices without SAM compared to a BPA containing device. It is noticeable as the presence of BPA as SAM interlayer between ZnO and α-NPD reduces the intensity of the CT signal, most likely due to the increased distance

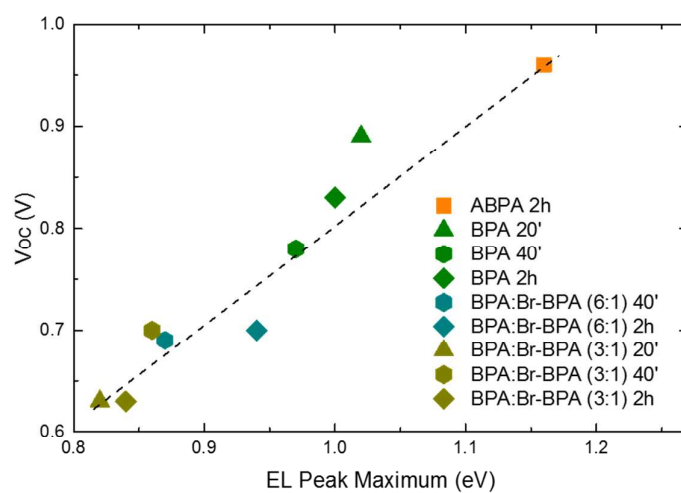
between donor and acceptor. Furthermore, the onset of the sub-gap signal shows a redshift.



**Figure S2** The energy of the CT state (1.5eV) is evaluated as the crossing point between the EL and the EQE CT bands, while the reorganization energy ( $\lambda$ ) corresponds to half of the stokes shift (0.9eV)



**Figure S3** Photoemission data of  $\alpha$ -NPD on different SAM covered ZnO surfaces.  $\alpha$ -NPD thicknesses are shown in each panel, which SAM interlayer was used is indicated to the right. The right panel shows the valence region of ZnO (black line) and 10 nm thick  $\alpha$ -NPD films, which are shifted in energy due to the differently employed SAM interlayers. The ZnO energy levels of Figure 2 were corrected by the shift of the  $\text{Zn}2p_{3/2}$  emission, which gives the internal band bending occurring when covering the ZnO with a self-assembled monolayer.



**Figure S4** Influence on  $V_{OC}$  and EL maximum of varies immersion times in growing the SAMs. Different growing conditions of the SAMs influence  $V_{OC}$  and EL maximum, but don't affect their linear correlation.