Electronic Supplementary Information

On-Chip Organic Optoelectronic System for Fluorescence Detection

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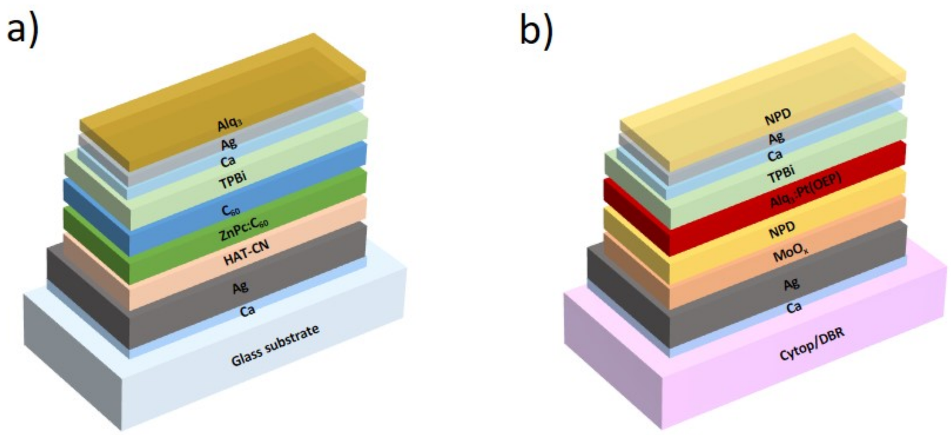

Figure S1. Device architecture of the individual device subcomponents of the fluorescence system, that are OLEDs (a) and OPDs (b).

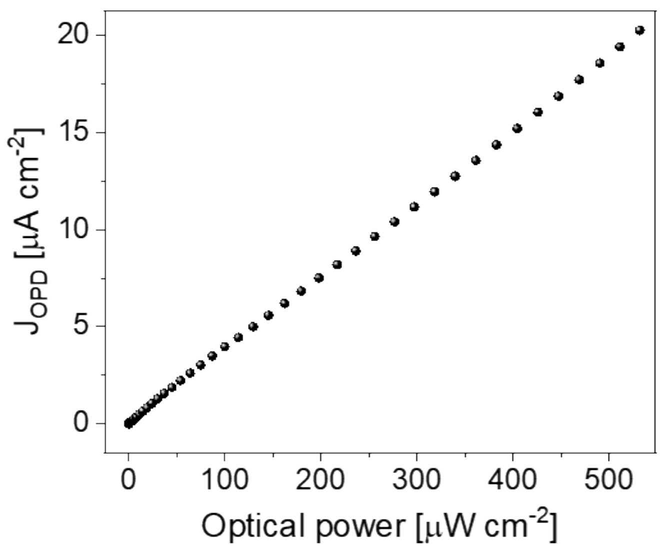

Figure S2. Current density of the OPD upon different light intensities. Excitation wavelength: 644 nm.

The OLED structure was optimized by the use of the commercial software SETFOS by Fluxim. In particular, simulations provided indications about the layer thicknesses in order to realize an OLED light source having a spectrum emission as narrow as possible while preserving good values of radiance.

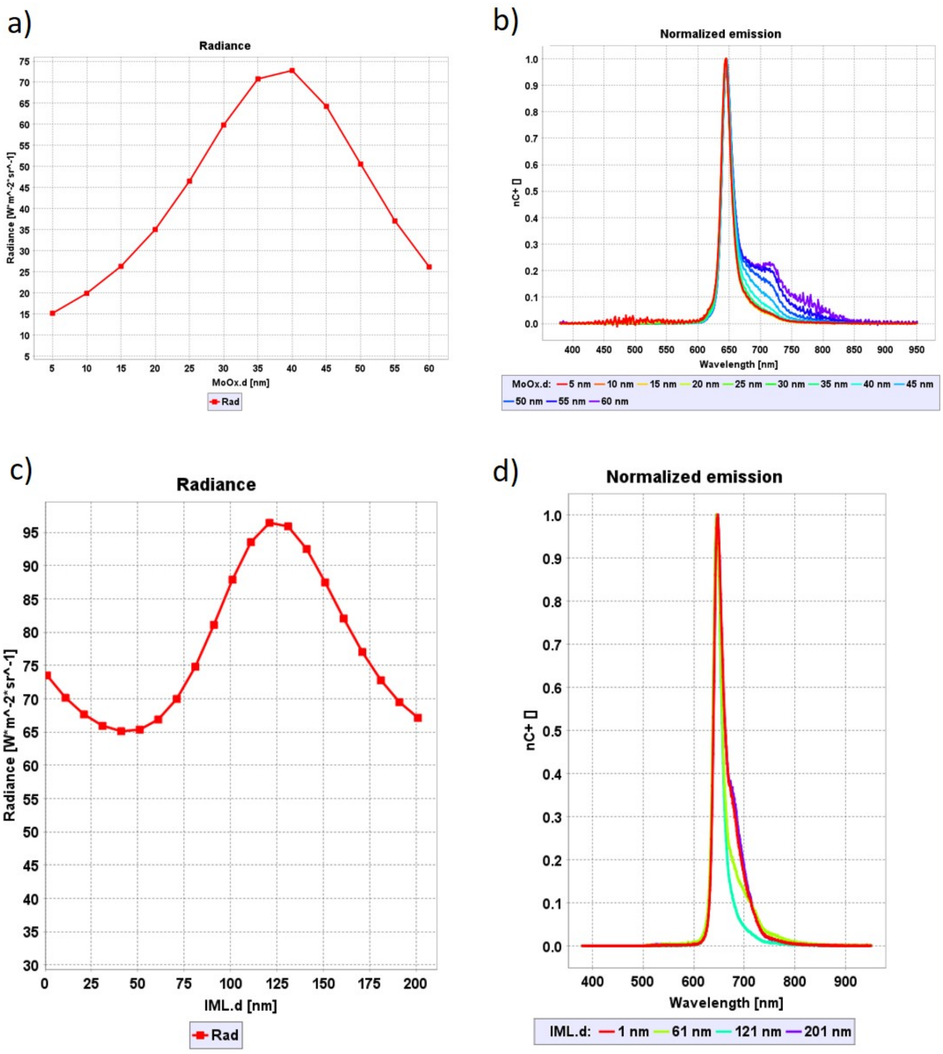

Figure S3. Simulation of radiance (a) and emission spectrum (b) of an OLED with a MoOx layer thickness ranging from 5nm to 60 nm. Simulation of radiance (c) and emission spectrum (d) of an OLED with a IML layer thickness ranging from 0 nm to 200 nm.

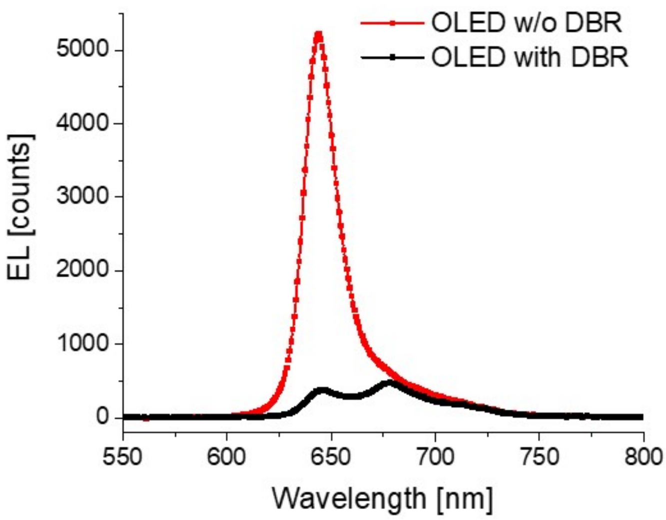

Figure S4. Electroluminescence spectra of Pt(OEP) OLED with (black line) and without (red line) DBR filter acquired by photomultiplier.

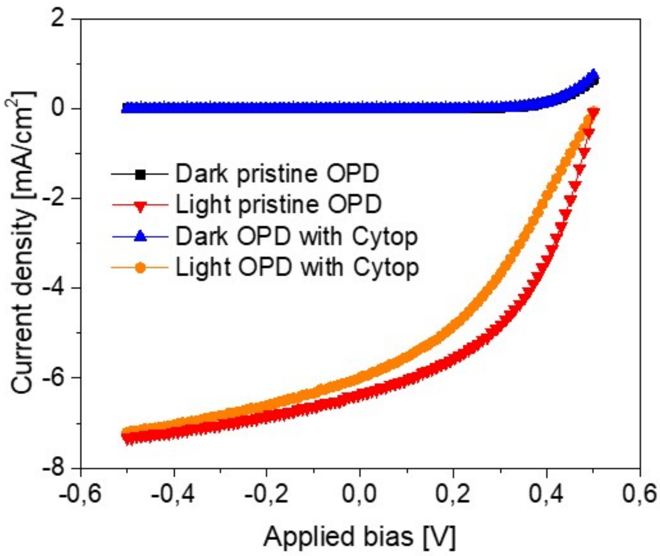

Figure S5. Current density in dark condition and under illumination from solar simulator (AM1.5G spectrum, 100 mW/cm^2) as a function of the applied bias, for pristine OPDs (black and red curves), and OPDs with Cytop on top (blue and orange curves).

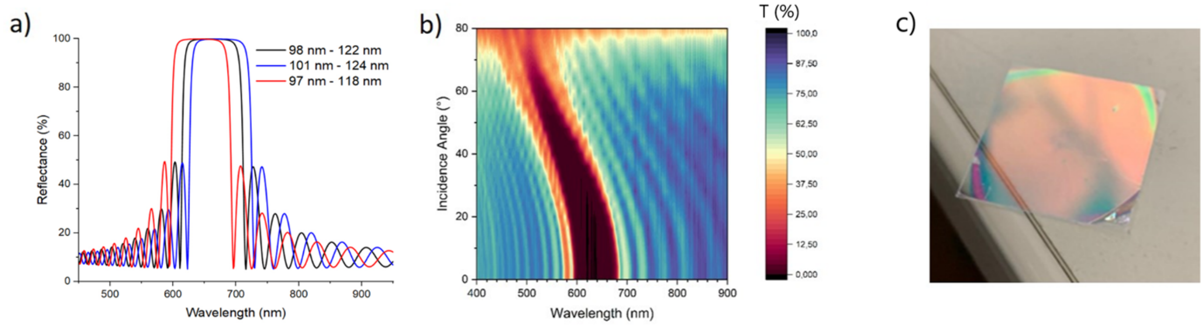

Figure S6. a) calculated reflectance spectrum of DBRs with similar structural parameters than the one fabricated. b) Transmittance spectrum of the DBR, measured at variable incidence angles with unpolarized light. The rejection region's blue shift with increasing angle is evident. c) Picture of the DBR on glass.

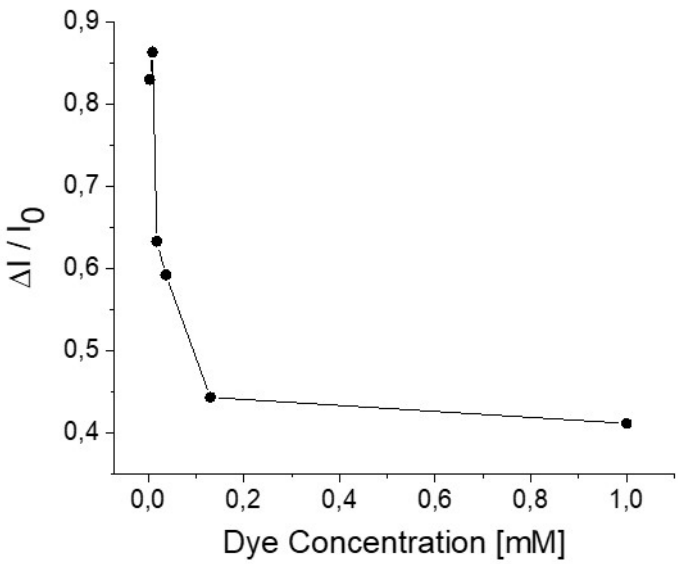

Figure S7. Contribution of the DBR filter with respect to the fluorescence signal calculated for the concentrations between 0 (pure ethanol) and 1 mM.

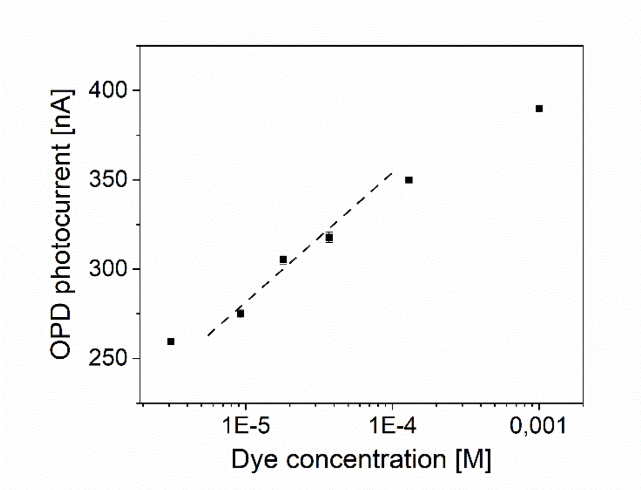

Figure S8. Semilogarithmic representation of the mean OPD photocurrent, with the relative standard deviation, when the fluorescence system is exposed to LD700 solutions with concentrations ranging from 3.1 µM to 1 mM. Dashed lines are a guide to the eye.

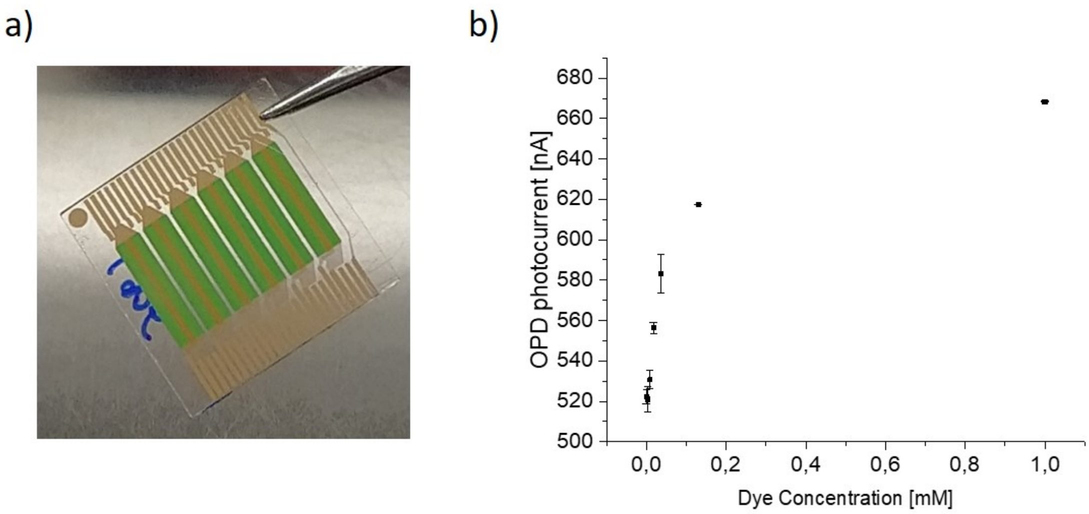

Figure S9. a) Picture of the developed system without the DBR filter. b) Mean photocurrent of the OPD with the relative standard deviation when the system without DBR filter is exposed to rhodamine 700 solutions at different concentrations.