

Organic light emitting diodes with a solution processible organic bulk heterojunction electroluminescent layer

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Experimental

The ITO covered glass slides (25x25 mm, $R=10\text{--}15\text{ Ohm}/\square$) were patterned using standard acid etching (HCl/HNO₃), cleaned using sonication in water, acetone and isopropanol and finally dried in air. The PEDOT:PSS (Clevios HTL) was spin-coated at 2500 rpm. The obtained films were transferred to argon glove box (MBraun Unilab) with oxygen and moisture content below 1 ppm and sintered at 195 °C for 30 min.

Polymer PF8 was dissolved in anhydrous chlorobenzene with stirring overnight to achieve material concentration of 5 mg/ml. At the same time, bis-TPBIIN was dissolved in anhydrous toluene to achieve the concentration of 10 mg/ml. The obtained solutions were filtered through PTFE syringe filters (0.45 μm) and mixed together in appropriate volumes to achieve variation in bis-TPBIIN : PF8 w/w ratios from 9:1 to 1:9. The obtained blend solutions were spin-coated on the top of dried PEDOT:PSS films at 900-1500 rpm inside glove box to keep the uniform film thickness for the systems with different component ratios. The prepared composite films were transferred to the PVD chamber where Ca layer (200 nm) was deposited by thermal evaporation under pressure of 10^{-6} mbar.

The $I\text{--}V$ characteristics of the prepared OLED devices were analyzed using Kethley 2400 source measurement unit. The brightness and spectral characteristics of OLEDs were obtained using Avantes 2048-2 fiber spectrometer with calibrated detector array.

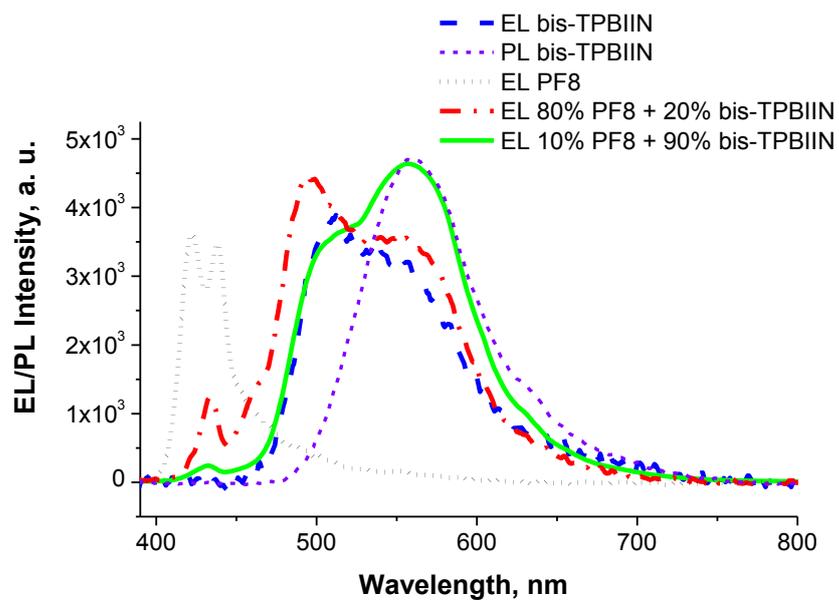


Figure S1 EL spectra of OLEDs based on pristine PF8, pristine bis-TPBIIN and their composites with minimal and maximal content of the n-type component.