

Towards low-temperature preparation of air-stable hybrid light-emitting diodes

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SUPPLEMENTARY INFORMATION

Device characterization:

Current density and luminance versus applied voltage were recorded using a Keithley 2400 combined with a Konica Minolta LS100 luminance meter. The instruments were controlled and the data captured using in-house software. XRD measurements were made using a Bruker-AXS D8-Discover diffractometer equipped with parallel incident beam (Göbel mirror), vertical θ - θ goniometer, XYZ motorized stage and with a GADDS (General Area Diffraction System).

ZnO film characterization:

Roughness Mean Square (RMS) values were measured by Atomic Force Microscopy (AFM), performed on tapping mode on a Molecular Imaging model Pico SPM II (Pico +). X-ray diffraction was done on ZnO films deposited onto Si (001) substrates at different temperatures using a Bruker-AXS D8-Discover diffractometer equipped with parallel incident beam (Göbel mirror), vertical θ - θ goniometer, XYZ motorized stage and with a GADDS (General Area Diffraction System). The X-ray diffractometer was operated at 40 kV and 40 mA to generate $\text{CuK}\alpha$ radiation. The GADDS detector was 30x30 cm with a 1024x1024 pixel sensor. We collected one frame (2D XRD pattern) covering 20-50° 2θ in grazing incidence mode (ω : 1°, 2θ : 34°) at a distance of 15cm from the sample to the detector. The exposition time was 300s per frame and it was chi-integrated to generate the conventional 2θ vs. intensity diffractogram.

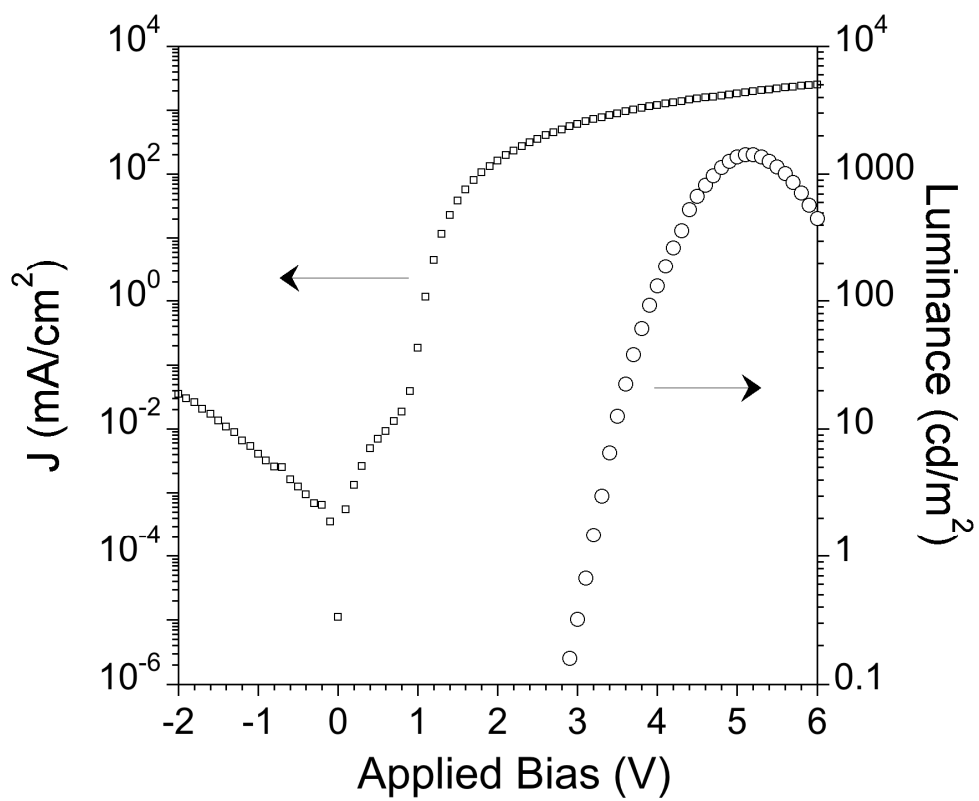


Figure S1. Device performance of ITO/F8BT/MoO₃/Au.

Table S1 Crystallite size derived from X-ray diffraction measurements.

Substrate temperature (°C)	Orientation	Crystallite size (nm)
450	(100)	-
450	(002)	6.4
450	(101)	11.5
450	(102)	5.5
350	(100)	5.6
350	(002)	6.0
350	(101)	7.3
350	(102)	3.9
250	(100)	5.2
250	(002)	4.8
250	(101)	4.8
250	(102)	-