Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supplementary information

Improving Light Extraction of Flexible OLEDs using a Mechanically Robust Ag Mesh/ITO Composite Electrode and Microlens Array

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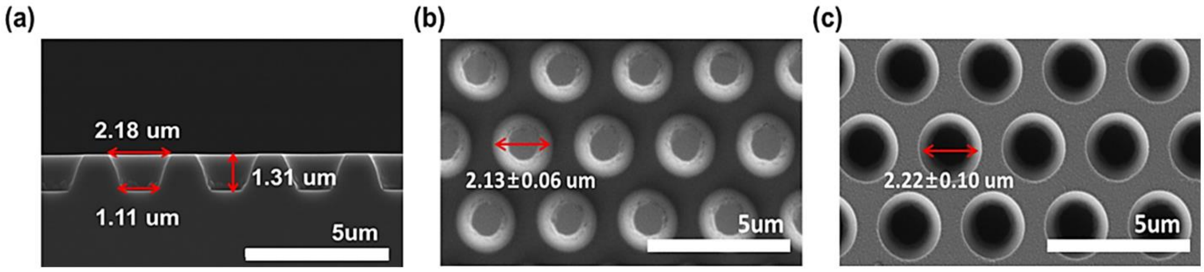

Figure S1. (a) Cross-section-view FE-SEM image of the MLA master mold at 10 kx magnification. Top-view FESEM images of (b) NOA74/PET template and (c) MLA replica mold (PDMS).

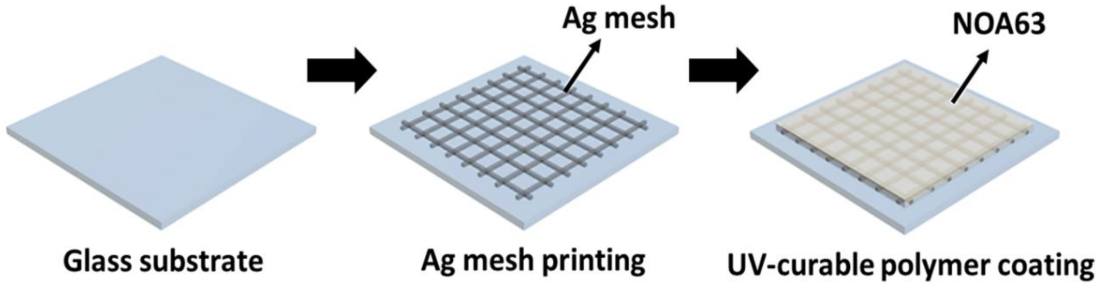

Figure S2. Schematic illustration of the Ag mesh fabrication and embedding process.

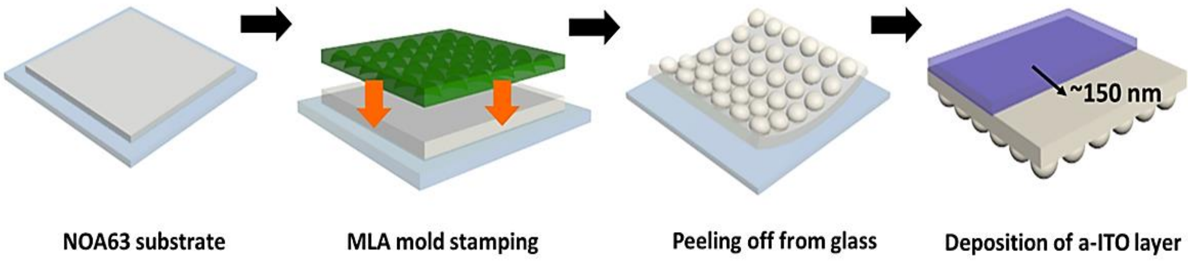

Figure S3. Stage-by-stage schematic illustration of the fabrication process for ITO electrodes with MLAs.

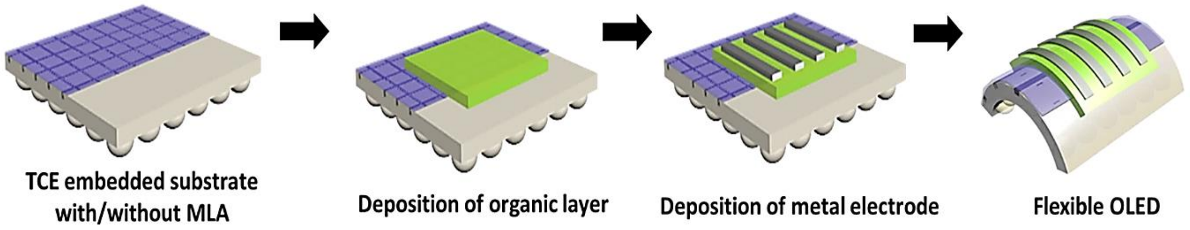

Figure S4. Schematic illustration of the OLED device fabrication process.

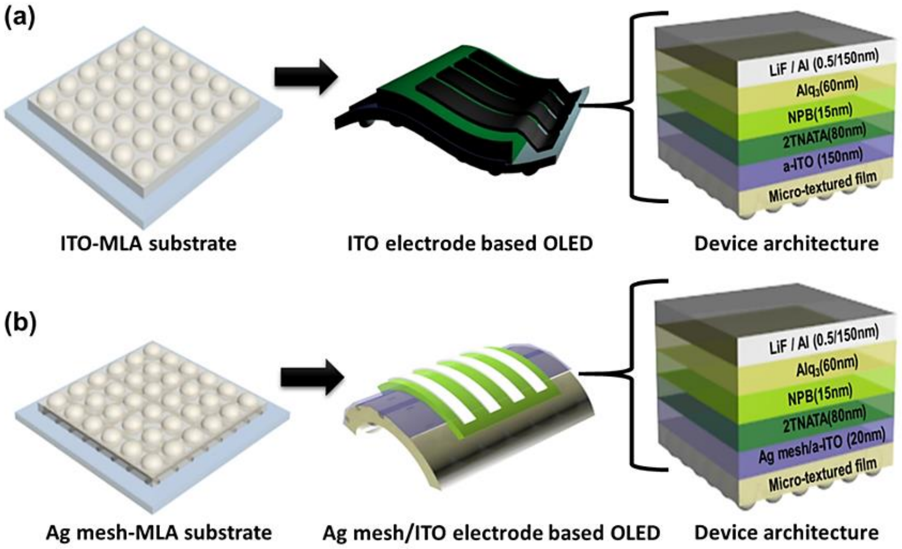

Figure S5. Schematic illustration of the device architecture of the as-fabricated (a) ITO-MLA- and (b) Ag mesh/ITO–MLA–based OLEDs.

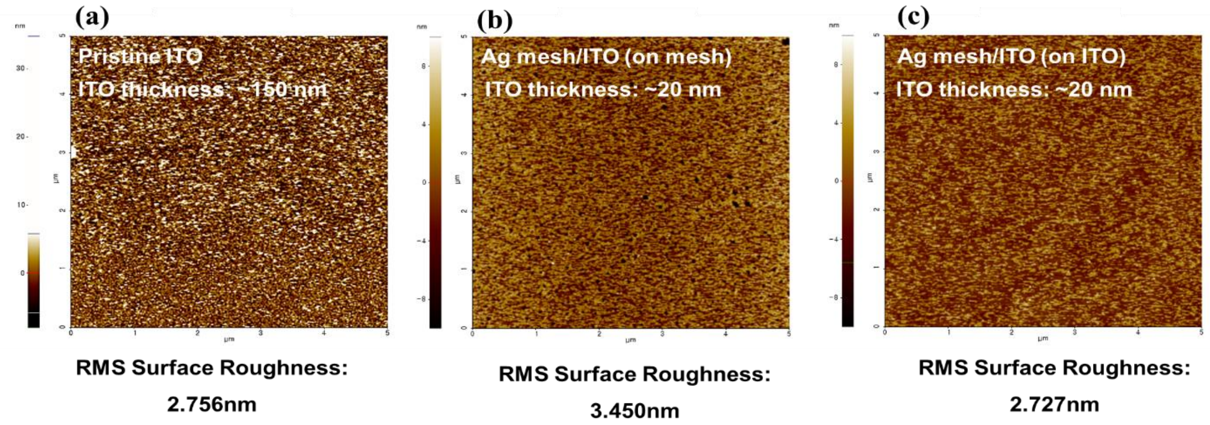

Figure S6. AFM topography micrograph of (a) pristine ITO electrode, (b) Ag mesh/ITO electrode (on mesh region) and (c) Ag mesh/ITO electrode (on ITO region).

Total EQE ($\eta_{EQE.total}$) measurement

The OLED devices with different substrates were aligned and attached to the entrance port of an integrating sphere (Labsphere Inc.), while a spectrometer (Ocean Optics, USB2000+UV-VIS) was connected to the outlet port of the integrating sphere to measure the luminous flux. It is noteworthy that the total luminous flux in the forward direction from the active emitting areas of the device opened toward the inside of an integrating sphere.

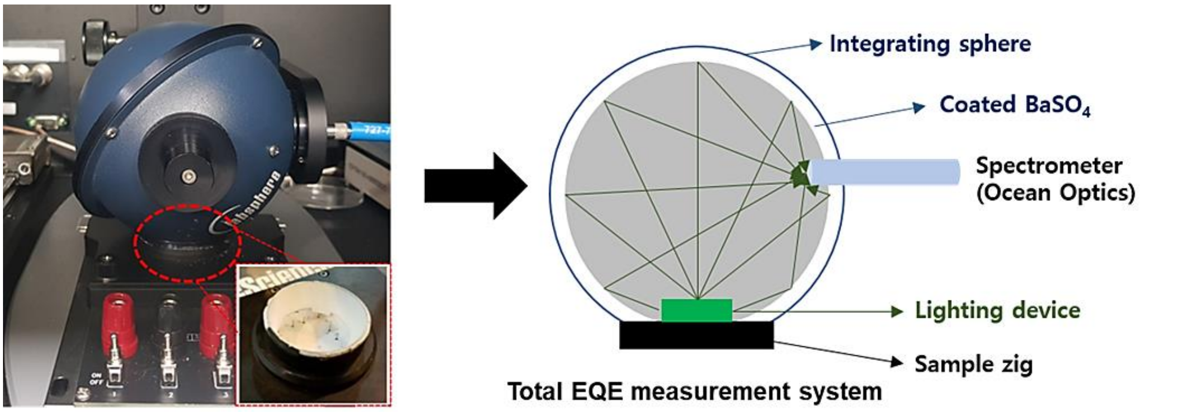

Figure S7. Actual image and schematic illustration of the $\eta_{EQE.total}$ measurement setup with the integrating sphere.

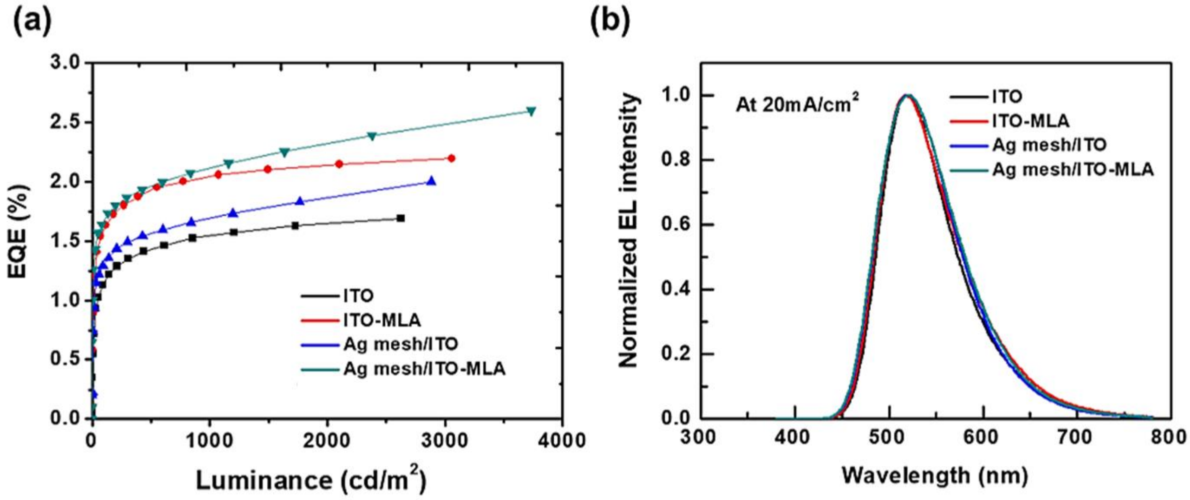

Figure S8. (a) EQE versus luminance and (b) normalized EL intensity versus wavelength for OLED devices employing different flexible substrates.

Bending test

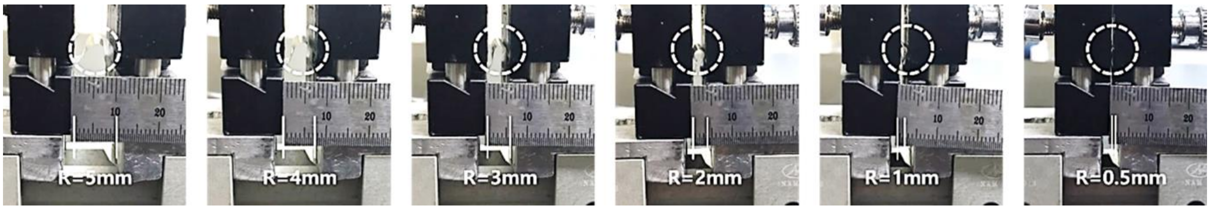

Figure S9. Photograph of the bending test setup at various values of bending radius, *R*.