

Supporting Information

S1: In order to verify the polymeric status of these three kinds of polymer material, the thermo-gravimetric analysis was carried out. The preparation conditions of the test sample were the same as the actual processing for encapsulation. The polymer films were made on the clean glass by spin-coated, and then a small amount of samples was scraped down for analysis test. As shown of thermo-gravimetric analysis in Fig. S1, the mass loss of CYTOP was merely less than 1% at 100°C (the maximum temperature that OLEDs materials can tolerate). It was also clearly observed that the mass loss of PDMS or SU-8 materials were even more slightly, indicating a relative-fully cured state of both materials. One can find that the mass loss of CYTOP became obviously at the temperature of 150°C ~ 180°C, which could be attributed the evaporation of solvent of CTL-809M. It has been reported that the fluorine-based polymer includes plenty of inert radicals, which scarcely make an influence on the underlined OLEDs devices (See the following references). Then the reliability evaluation of encapsulated OLEDs with AMO + CYTOP structure has testified that the CYTOP film under the processing temperature of 80°C could satisfy the basic requirements of thin film encapsulation.

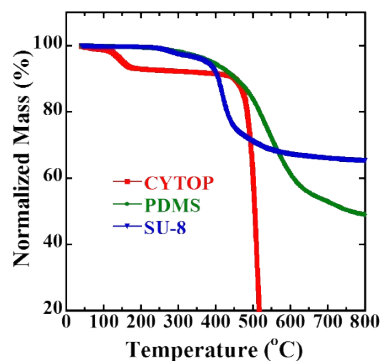


Fig. S1 Thermo-gravimetric analysis of three polymers.

References

- (1) S. Krotkus, F. Ventsch, D. Kasemann, A. A. Zakhidov, S. Hofmann, K. Leo and M. C. Gather, *Adv. Opt. Mater.*, 2014, 2, 1043-1048.
- (2) K. Fukuda, Y. Takeda, M. Mizukami, D. Kumaki and S. Tokito, *Sci. Rep.*, 2014, 4, 3947.

S2: The bending test was also carried out with own designed equipment, to examine

the reliability of flexible AMOLEDs displays. The bending apparatus can precisely realize a minimum radius of 5 mm with continue working and counting. As shown in Fig. S2, different bending radius of the display was executed to observe the performance change with this machine. Finally, it was found that, with radius of 5 mm, performance degradation caused by crack after 100,000 times was not raised up. This excellent reliability could be ascribed to the thinner and simpler structure of AMO + CYTOP film, thus avoiding the accumulation of stress and delamination.

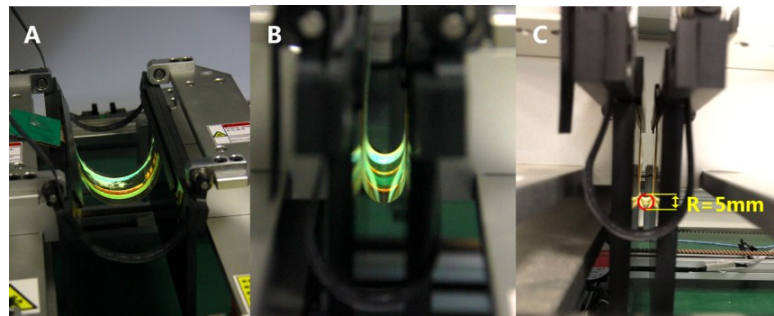


Fig. S2 The bending test for AMOLED displays under different bending radius.