Supporting information

High-performance Ambipolar Field-effect Transistors with Ph-BTBT-10/PMMA/ZnO structure

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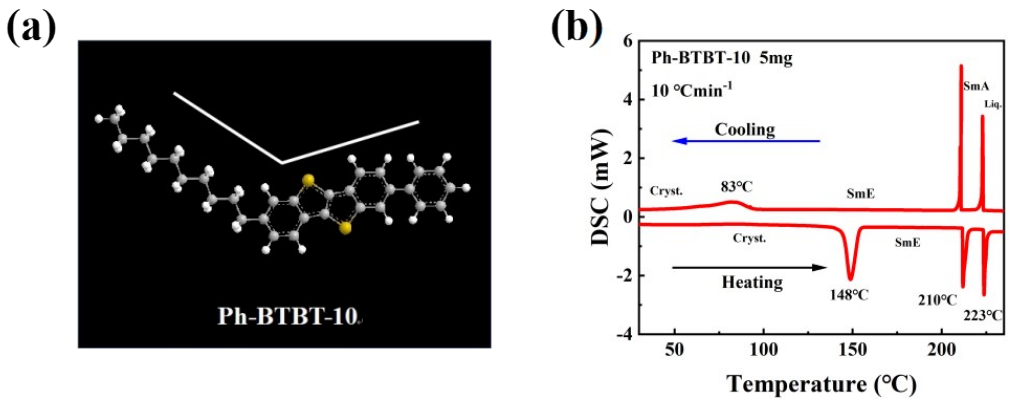

Figure S1 (a) The molecular simulation structure of liquid crystal molecule Ph-BTBT-10. (b) The differential scanning calorimetry (DSC) curve of 5 mg Ph-BTBT-10 obtained at 10 °C min^{-1}.

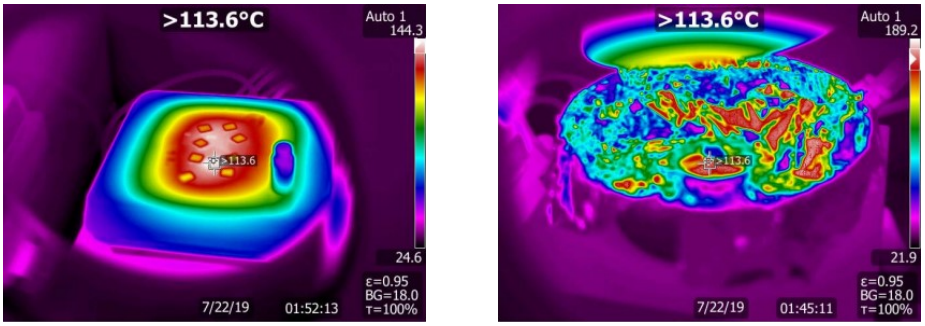

Figure S2 Infrared images of preparation environment. The temperature is controlled by the infrared light during the whole fabrication of the Ph-BTBT-10 thin film.

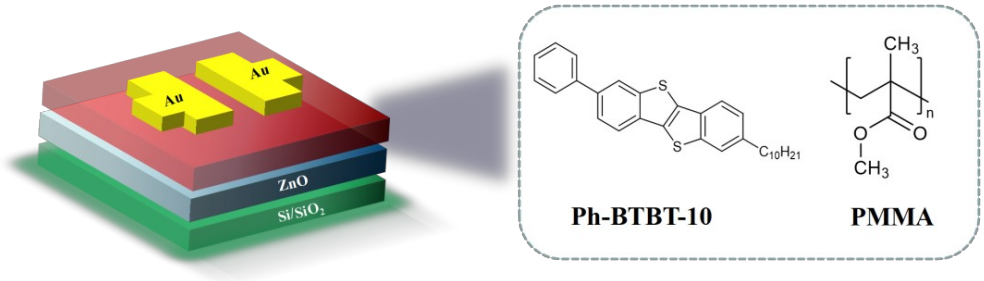

Figure S3 Schematic diagram of ambipolar FET based on Ph-BTBT-10/PMMA/ZnO architecture.

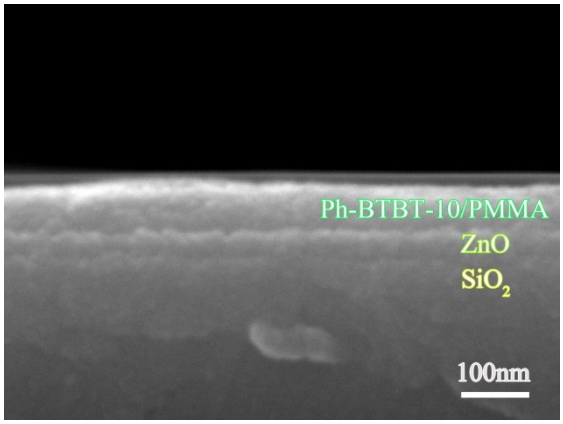

Figure S4 The cross-sectional image of the Ph-BTBT-10/PMMA/ZnO/SiO_2/Si++ film.

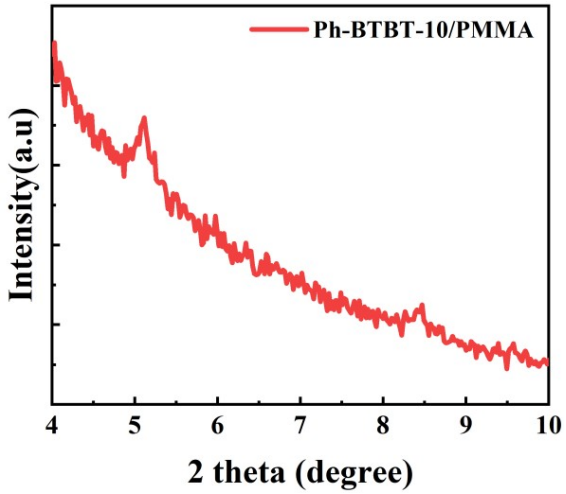

Figure S5 The XRD pattern of the Ph-BTBT-10/PMMA blend film. The blending ratio of PMMA and Ph-BTBT-10 is 2:1.

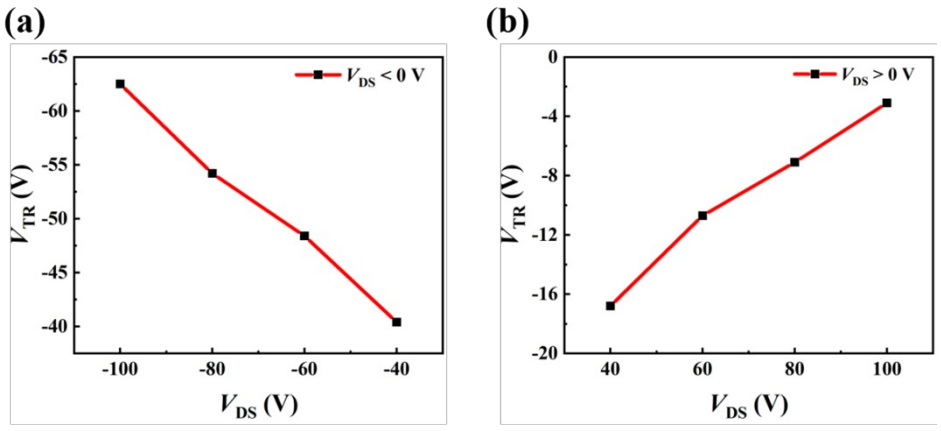

Figure S6 V_{TR} virus V_{DS} in (a) p-type and (b) n-type operation.

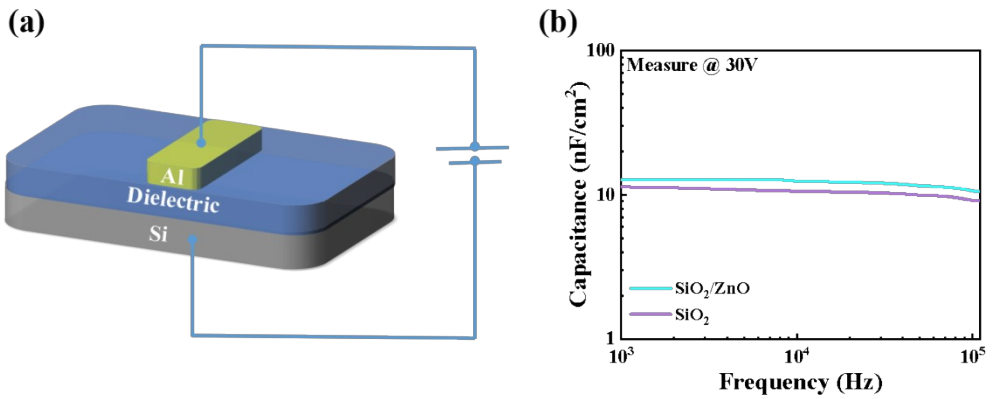

Figure S7 (a) Schematic diagram of capacitance measurement. (b) The capacitance values of SiO_2 and ZnO/SiO_2 from 1 kHz ~ 1 MHz.

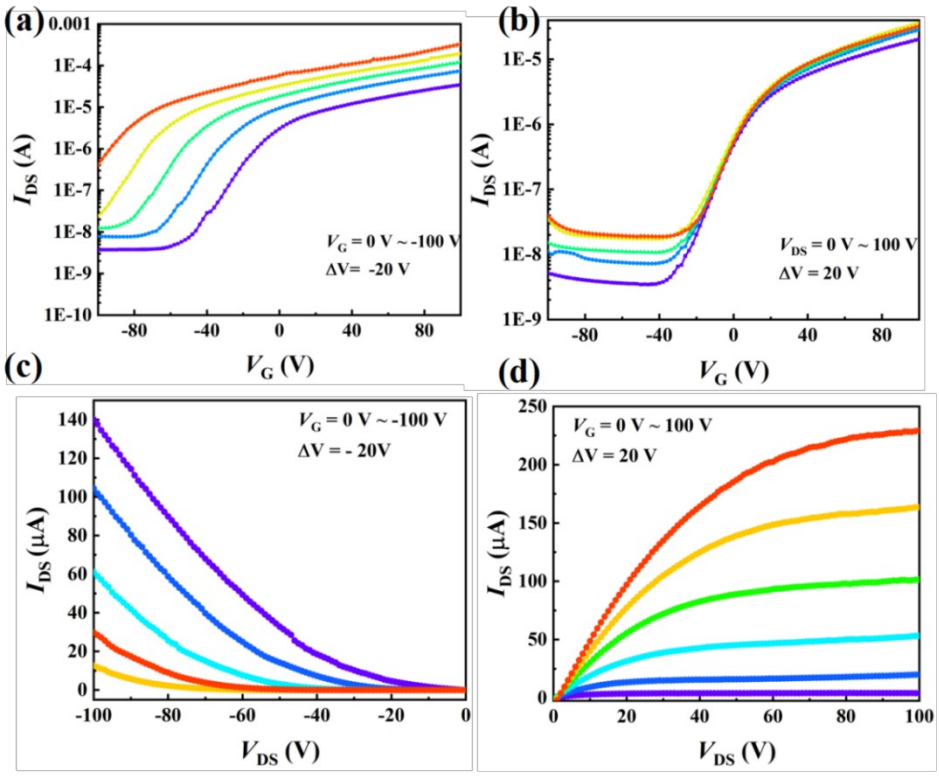

Figure S8 The transfer characteristic curves of ambipolar FET based on Ph-BTBT-10/ZnO structure in (a) n-type mode (V_{DS} > 0V) and (b) p-type mode (V_{DS} < 0V). The output characteristic curves of ambipolar FET based on Ph-BTBT-10/ZnO structure in (c) n-type mode and (d) p-type mode.

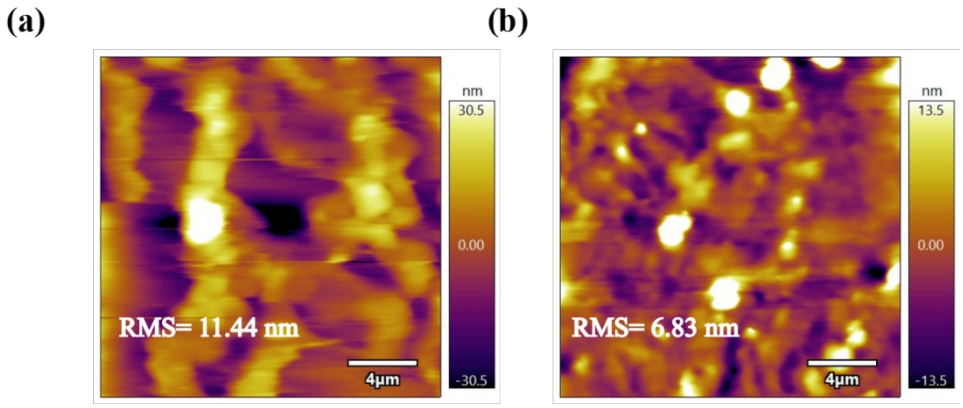

Figure S9 AFM images of (a) pure Ph-BTBT-10 film and (b) Ph-BTBT-10/PMMA blend film. The blending ratio of PMMA and Ph-BTBT-10 is 2:1.