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

Supporting information

Solution-processed thin films of a charge transfer complex for ambipolar field-effect transistors

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1. Shelf stability of the TCNQ:PS blend devices

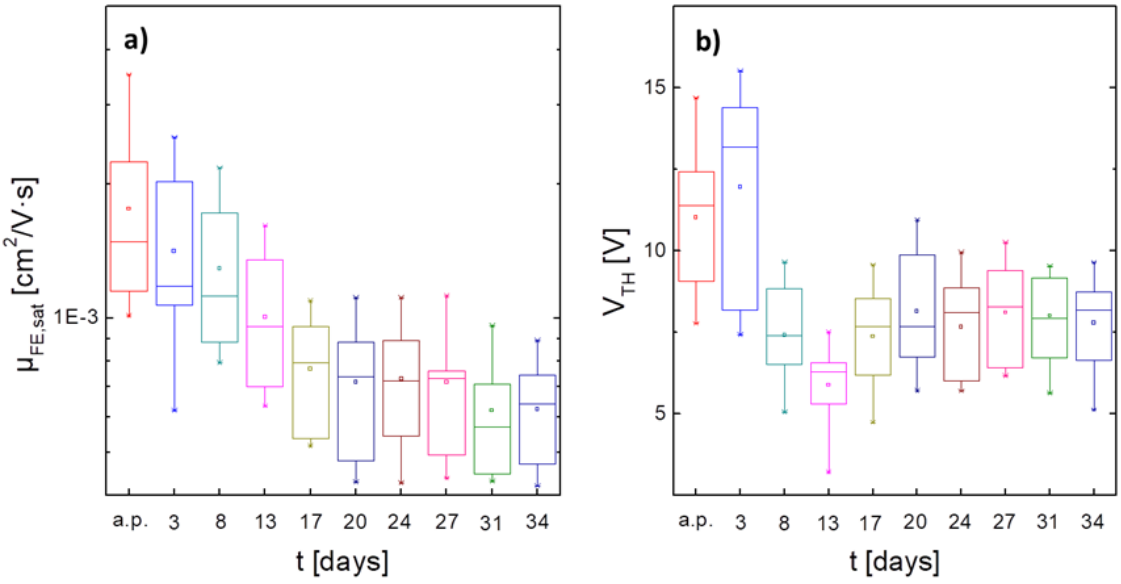

Figure S 1 a) $\mu_{FE,sat}$ and (b) V_{TH} measured in different days after the thin-film fabrication. The devices were stored in ambient conditions and darkness.

2. Crystal morphologies by different solvents mixtures

Figure S 2 Crystal morphologies obtained by Chlorobenzene (CB), Chlorobenzene:Benzonitrile 50:50 (CB:BZN 1:1), Chlorobenzene:Benzonitrile 66:33 (CB:BZN 2:1), Chlorobenzene:Dimethylformamide 1:1 (CB:DMF 1:1), Chlorobenzene:Dimethylformamide 66:33 (CB:DMF 2:1), Chlorobenzene: Dimethyl sulfoxide 1:1 (CB:DMSO 1:1) and Chlorobenzene: Dimethyl sulfoxide 66:33 (CB:DMSO 2:1).

3. DBTTF-TCNQ:Polymer blend films in different conditions

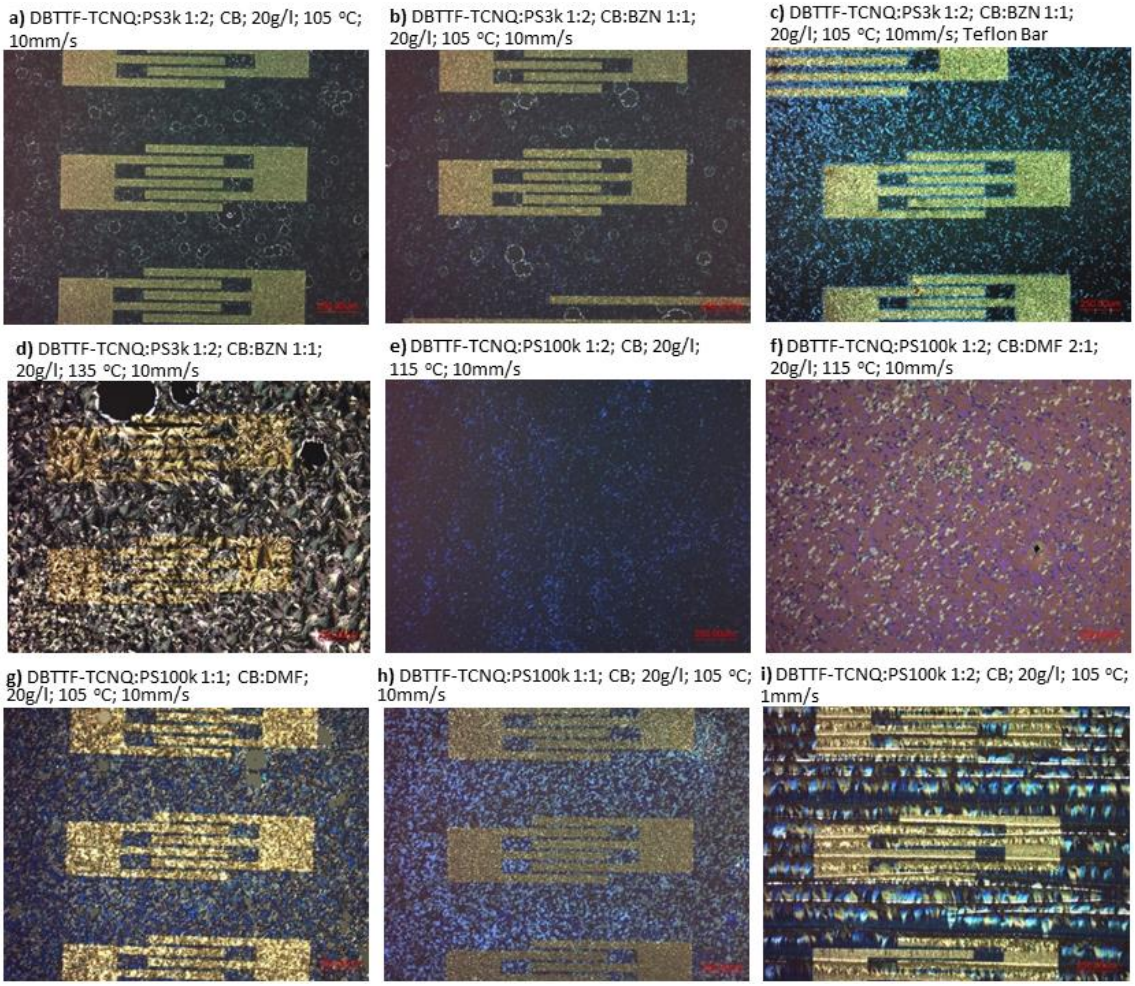

Figure S 3 Different film morphologies changing the blend ratio and the deposition conditions.

4. XRD of the films obtained in different experimental conditions.

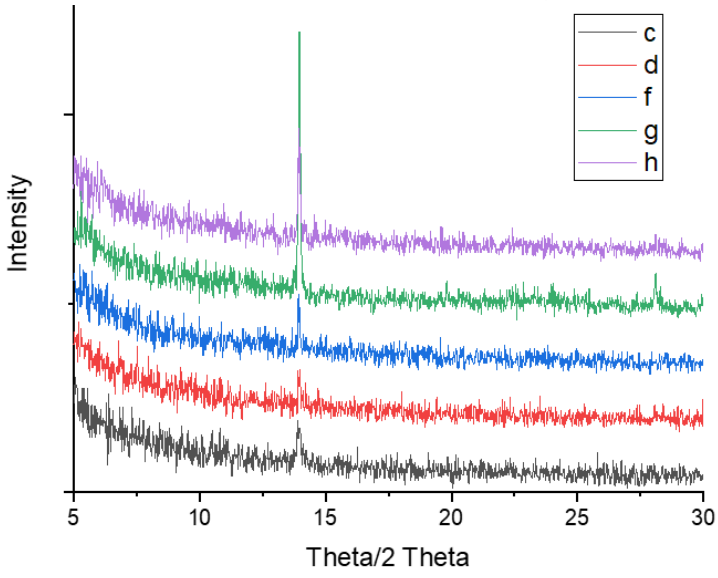

Figure S 4 PXRD of representative films obtained in different conditions. The label are referred to Figure S2.

5. AFM morphology and analysis of the step profile

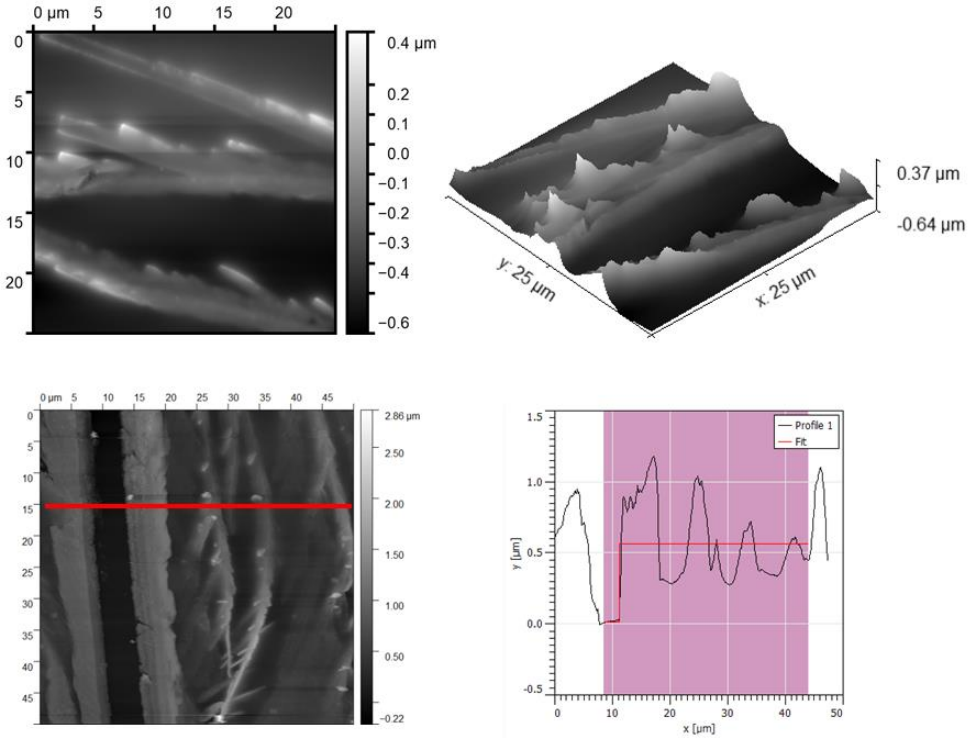

Figure S 5 AFM morphology of the DBTTF-TCNQ:PS280K 1:2 blend film (top) and step profile analysis (bottom)

6. Micro-Raman spectra of the needles and flat areas of the film

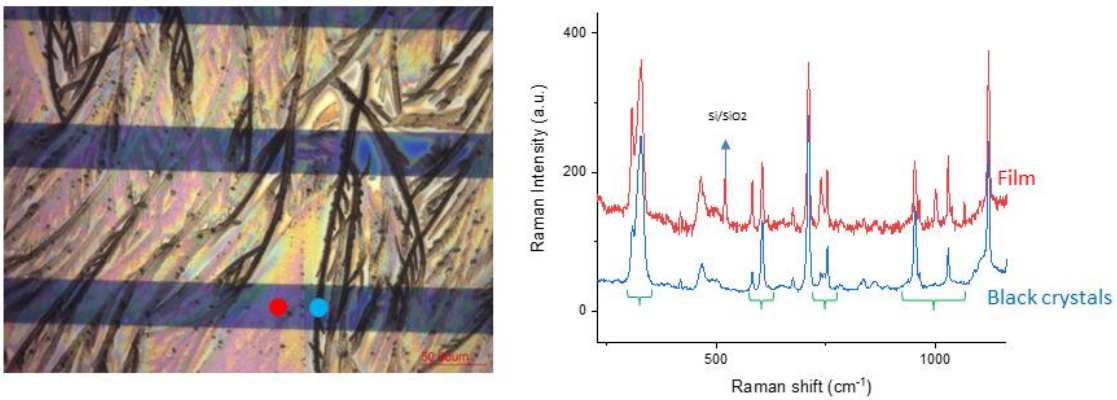

Figure S 6 Optical image of the film investigated (left) and Raman spectra of the two points analysed (right). The blue and red spot are correlated with the color code of the spectra.

7. Extended Infrared spectra of the films

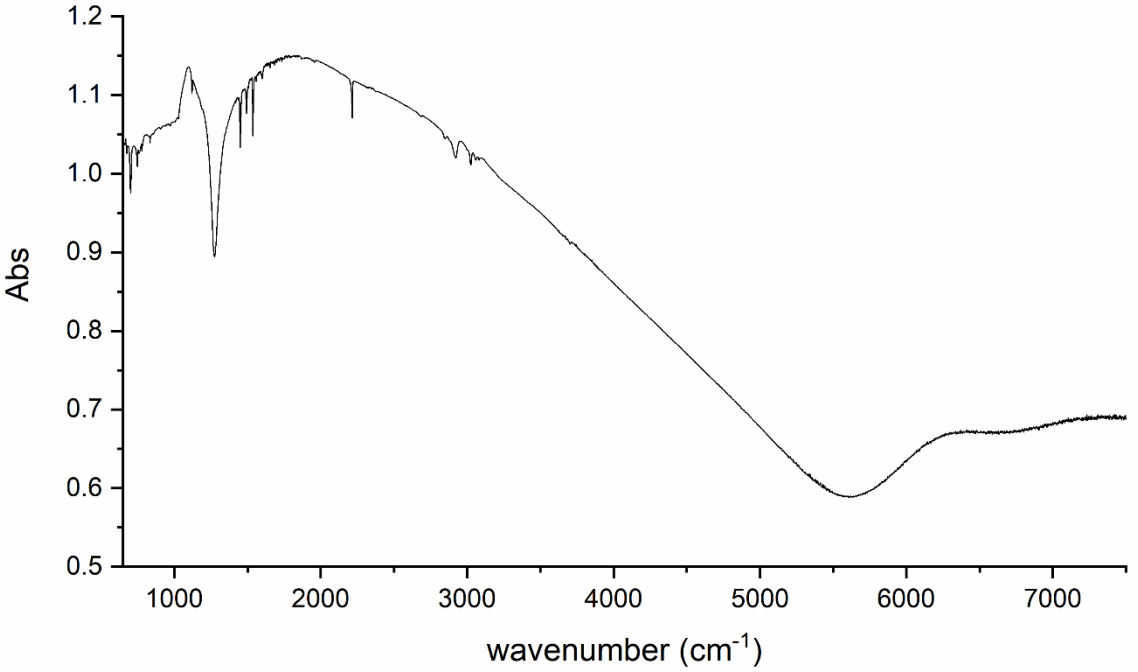

Figure S 7 Extended IR spectrum of the DBTTF-TCNQ:PS280K 1:2 blend film: the pronounced peak around 1200 cm^{-1} belongs to the dielectric layer (SiO2), the broad band between 5500 and 6000 cm^{-1} is the electronic charge transfer transition.