Supplementary Information

Improving the Efficiency of All-Polymer Solar Cells by Morphology Control via Combination Approach: Polar Solvent Additive and External Electric Field

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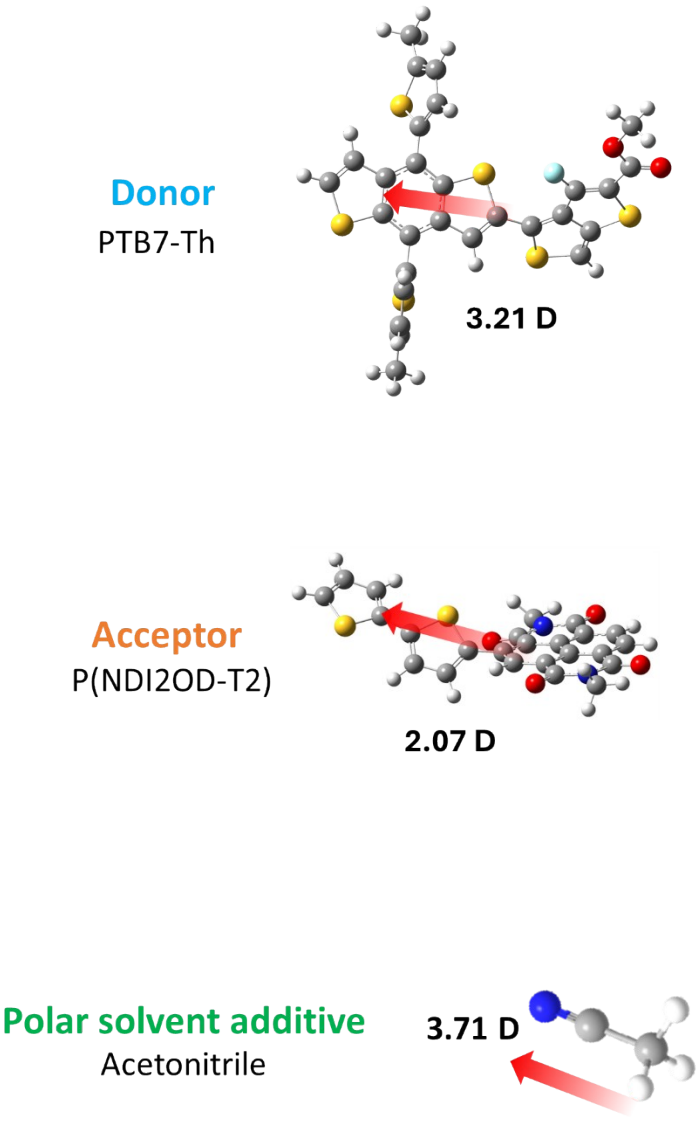

Fig. S1. Density functional theory (DFT) calculation result of active materials (donor and acceptor) and polar solvent additive in active solution

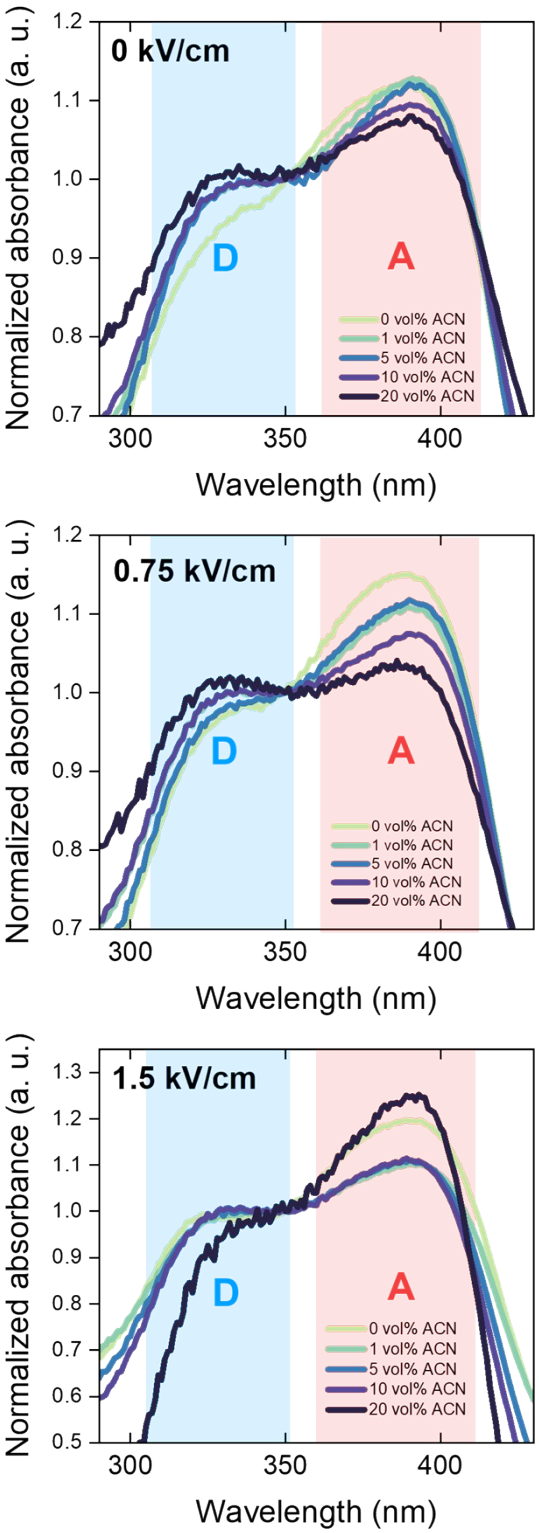

Fig. S2. The absorpton spctra of film samples in range of 280-450 nm depending on the external electric field voltages (0 kV/cm, 0.75 kv/cm, 1.5 kv/cm)

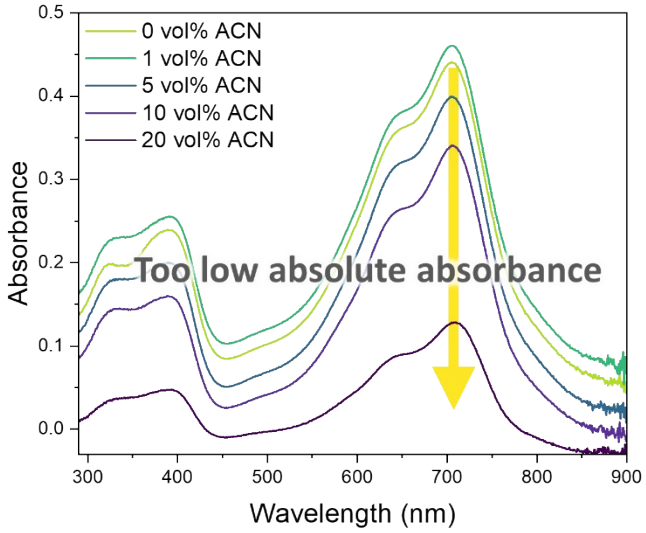

Fig. S3. Drastic reduction of absorption intensity depending on the increase of ACN ratio

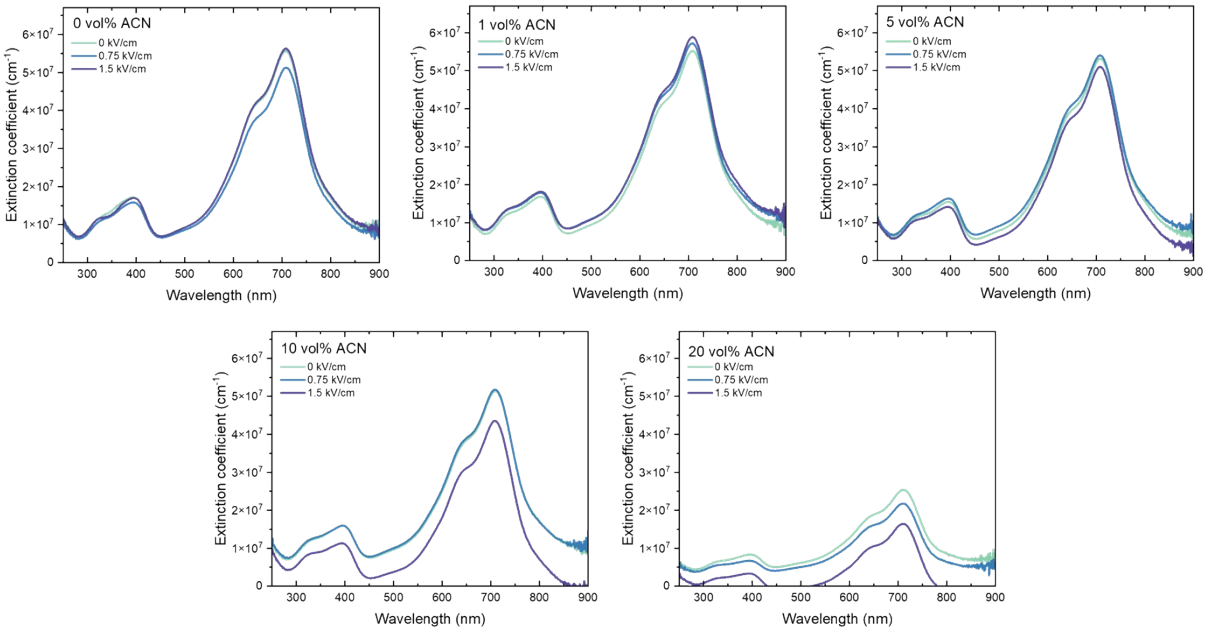

Fig. S4. The extinction coefficient of BHJ films with addition of solvent additive and external electric field treatment

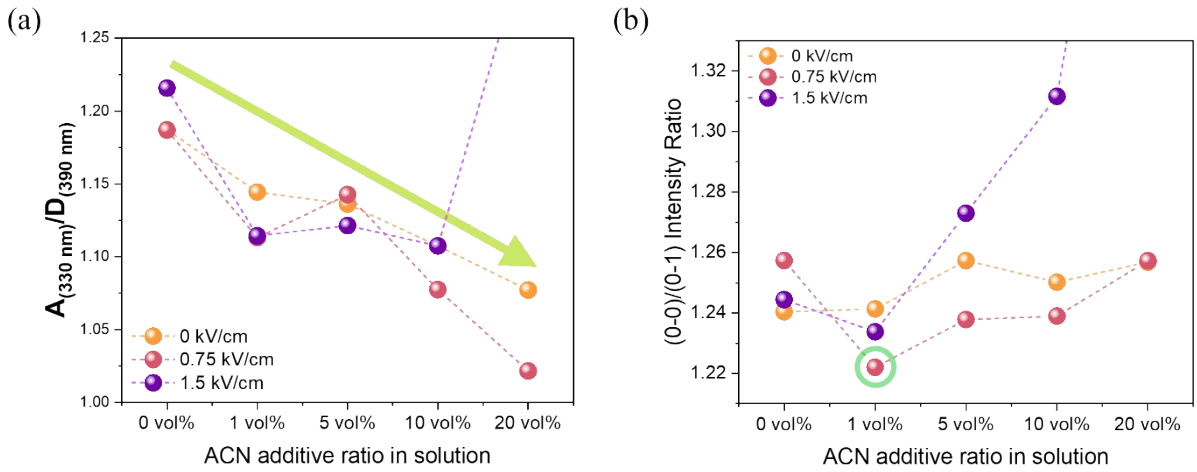

Fig. S5. (a) The trend of the absorption peak intensity of the acceptor (330 nm peak) relative to the donor (390 nm peak) (b) The trend of the (0-0)/(0-1) intensity ratio extracted from the absorption spectrum of donor

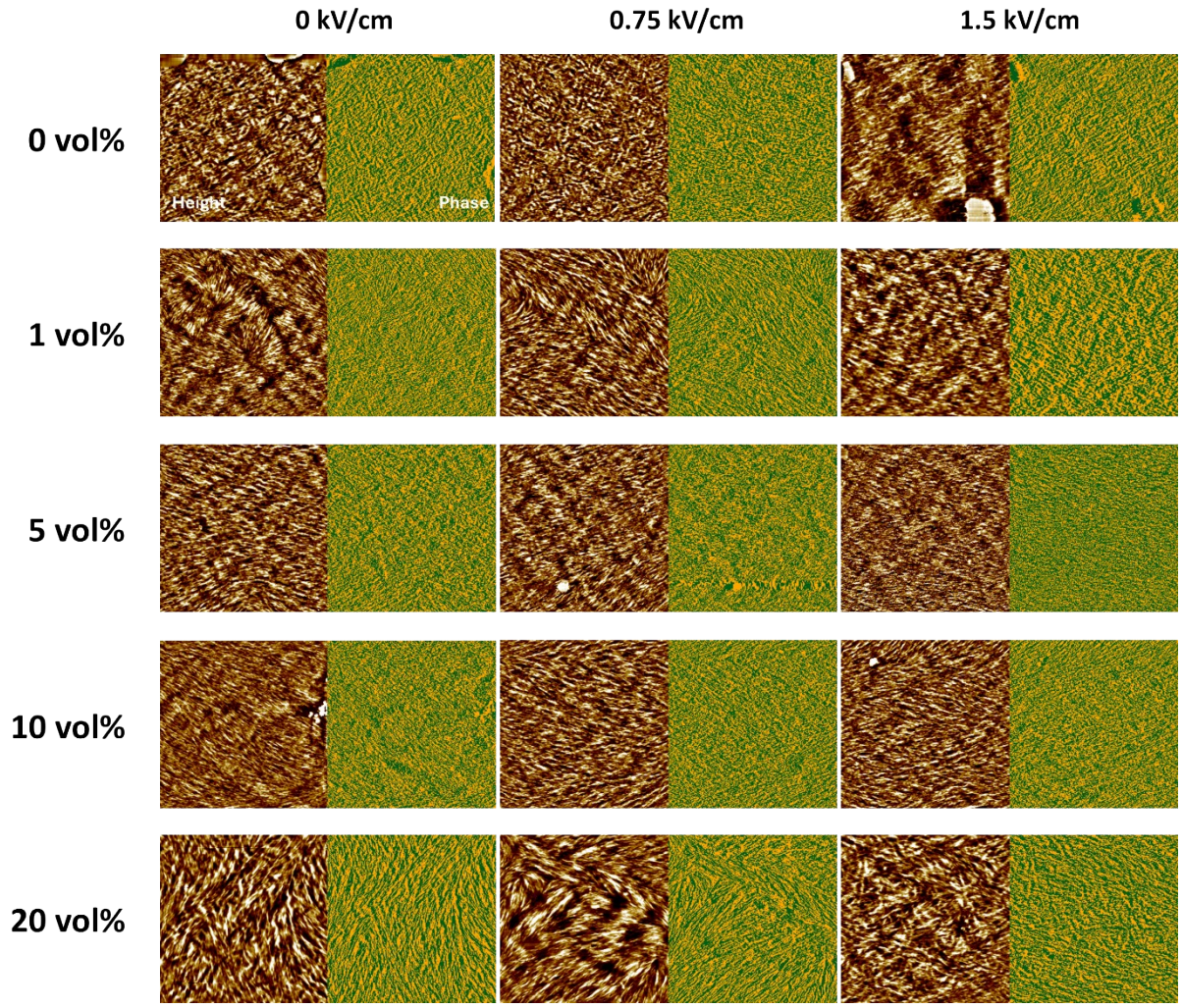

Fig. S6. The AFM images showing the surface morphology as a function of the ACN addition ratio and the voltage of the external electric field applied to the BHJ films, with phase images clearly discriminating the polymer fibrillar structure

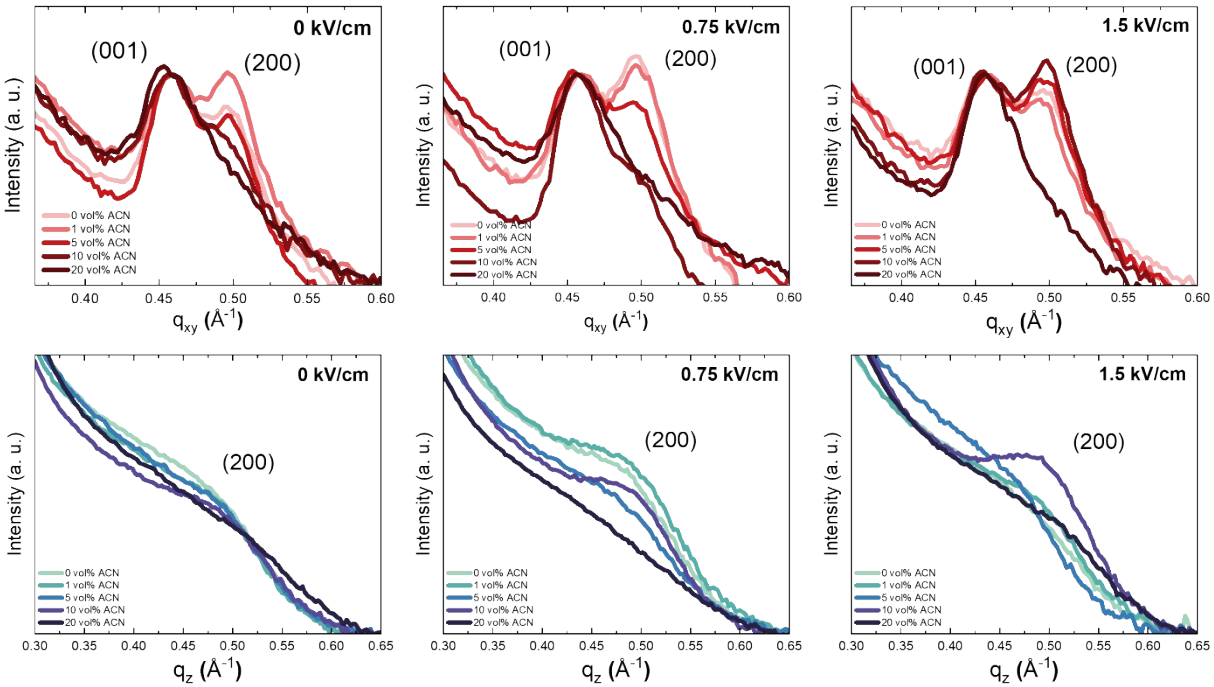

Fig. S7. Linecut graphs of GIWAXS data showing the crystallinity of the (200) crystal of P(NDI2OD-T2).

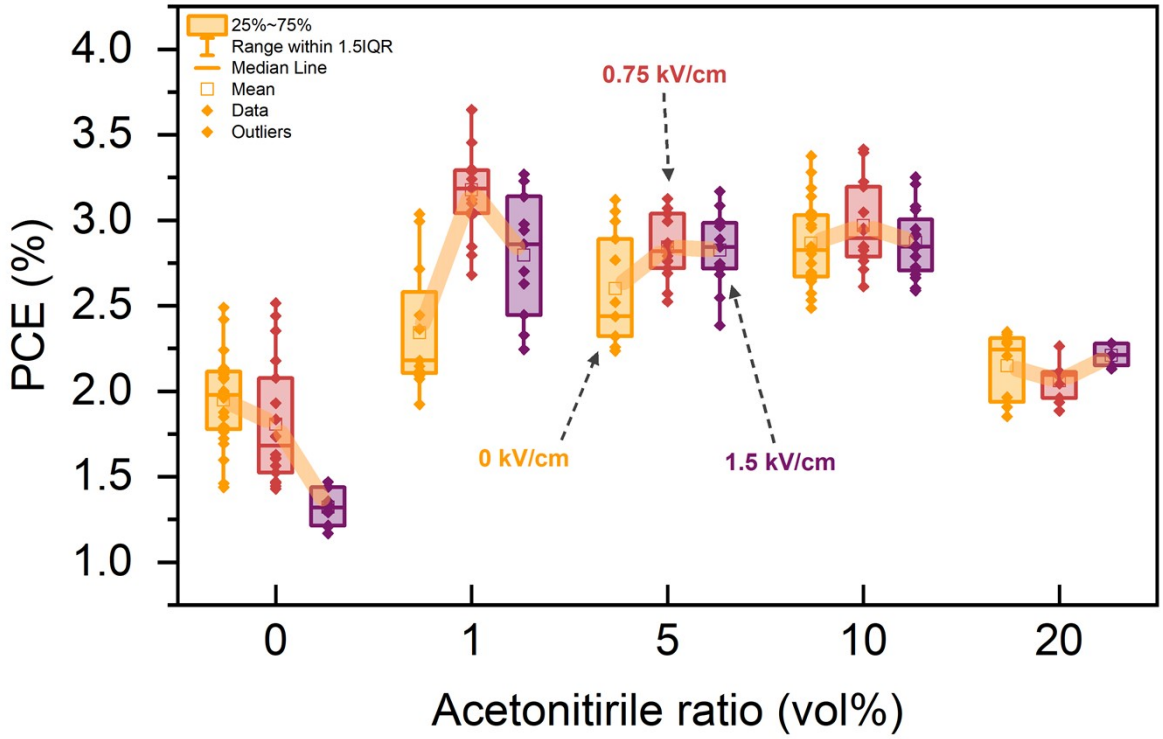

Fig. S8. Trend of power conversion efficiency (PCE) as a function of external electric field application and the volume ratio of acetonitrile