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Supporting information

Optimizing chain alignment and preserving the pristine structure of single-ether based PBTTT helps improve thermoelectric properties in sequentially doped thin films

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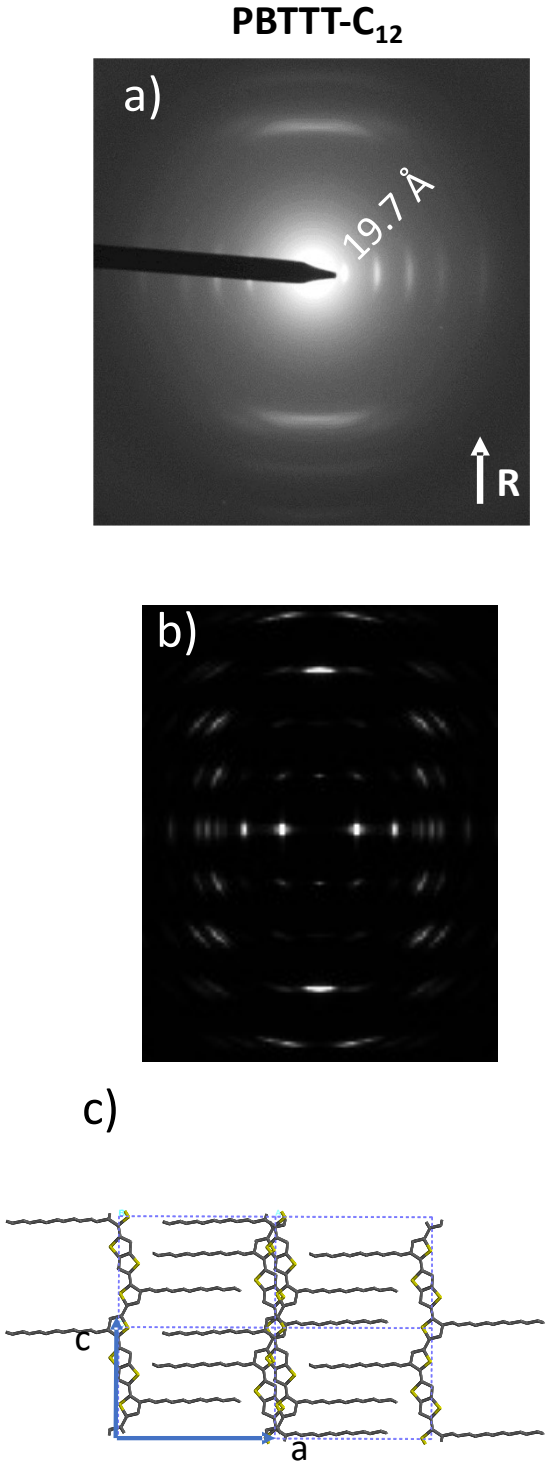

Figure S1. a) ED pattern of oriented PBTTT-C_{12} aligned by rubbing at 125°C. b) fiber pattern calculated using Cerius[2] for the structural model shown in figure c) with alkyl side chains oriented perpendicular to the PBTTT backbone.

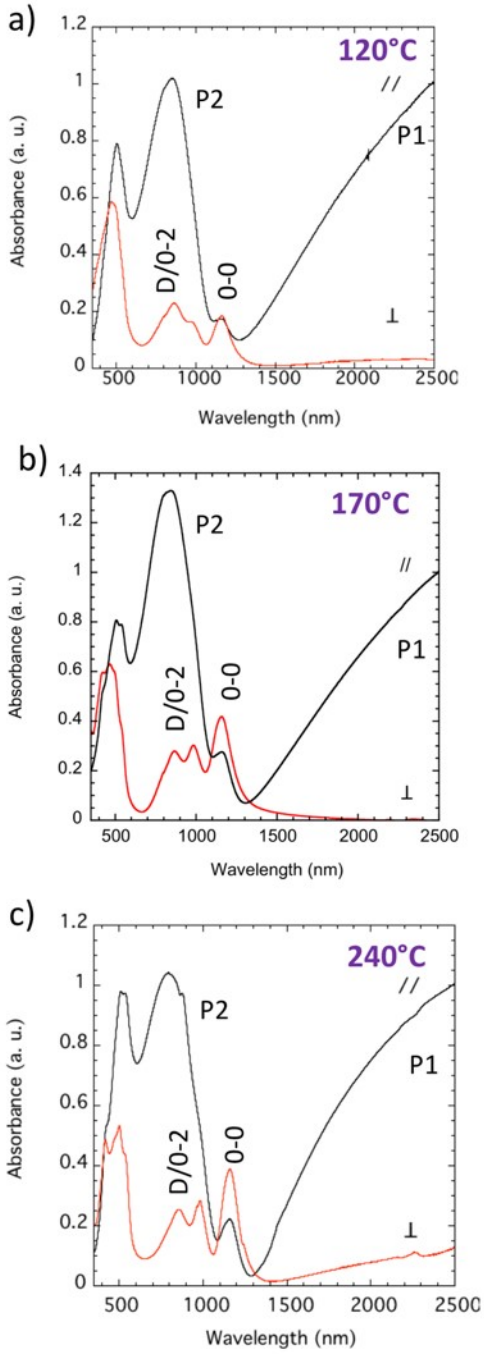

Figure S2. Evolution of the UV-vis-NIR polarized spectra of PBTTT-^{8}O thin films oriented by high temperature rubbing at a) 120°C, b) 170°C and c) 240°C. The spectra are recorded for incident light oriented parallel (//) and perpendicular (red, ⊥) to the rubbing direction. The major features are annotated, including the contribution of F_6TCNNQ^- dimers (D) that overlaps with that of molecular F_6TCNNQ^-.

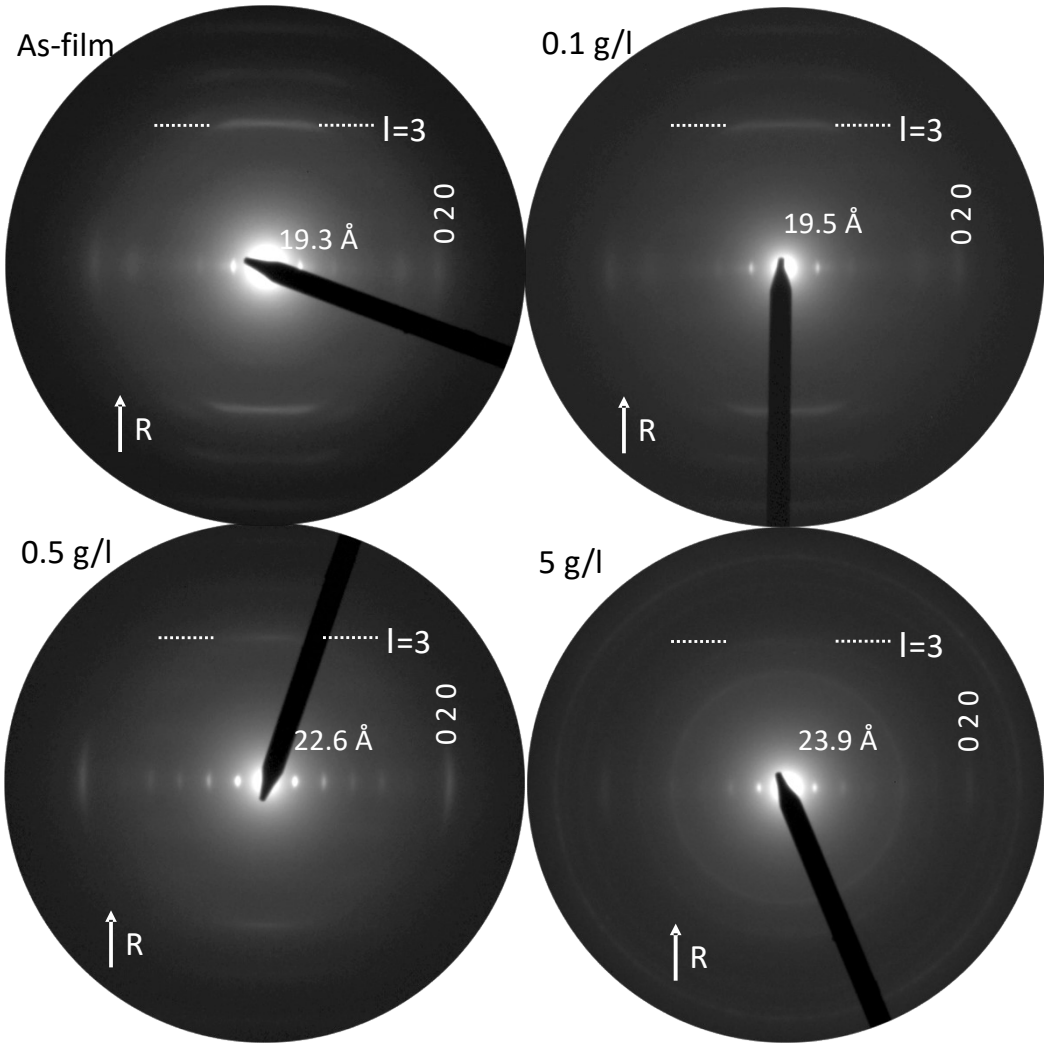

Figure S3. Evolution of the ED pattern of oriented PBTTT-^{8}O rubbed at 170°C as a function of the concentration of $FeCl_3$ (in nitromethane). Note the fading of the meridional reflections in the l=3 layer line with increasing doping level. This is symptomatic of the destruction of π-stacking in individual π-stacks of PBTTT backbones upon $FeCl_3$ dopant intercalation. The intensity of the equatorial 0 2 0 and the h 0 0 reflections (h=1-3) is particularly reduced for [$FeCl_3$]=5g/l.

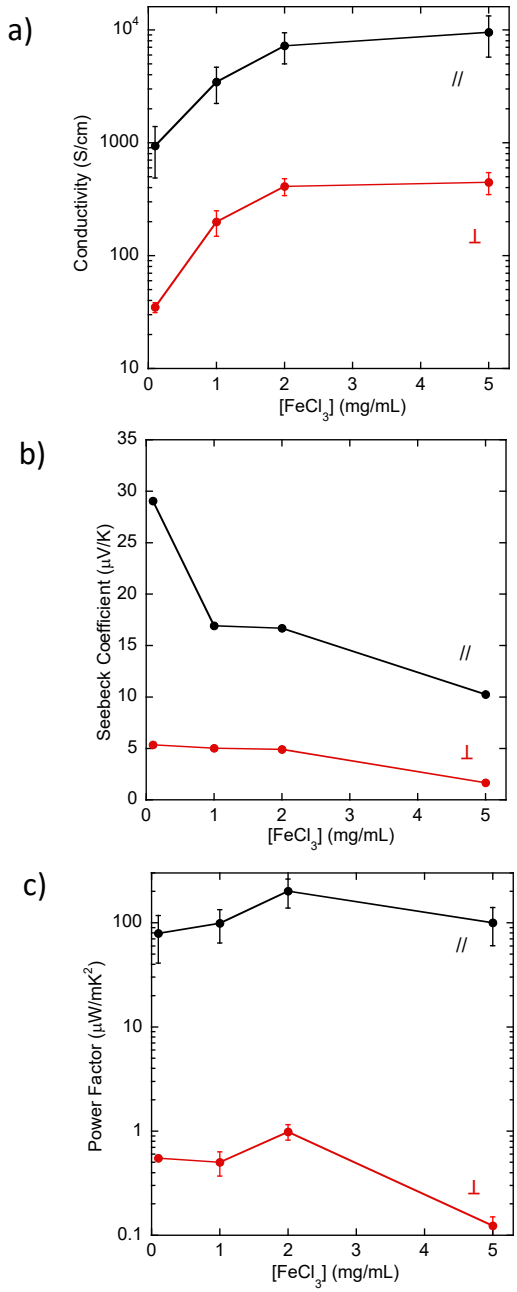

Figure S4. Evolution of the charge conductivity (a), Seebeck coefficient (b) and power factor (c) for oriented PBTTT-^{8}O thin films (T_R=170°C) doped with $FeCl_3$ in nitromethane for the orientation parallel (black symbols) and perpendicular (red symbols) to the rubbing direction.