Electronic Supplementary Information

PEDOT Nanostructures Synthesized in Hexagonal Mesophases

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Figure S5- *TEM image of PEDOT polymers synthesized in bulk solution (without using the swollen hexagonal mesophases). 0.1 M in EDOT and 0.1 M in $FeCl_3$ were used for PEDOT preparation.*

Figure S6- *TEM image of PEDOT polymers first synthesized in bulk solution using 0.1 M in EDOT and 0.1 M in $FeCl_3$, then incorporated in mesophases and finally extracted from these latter thanks to our optimized extraction procedure.*

Figure S1

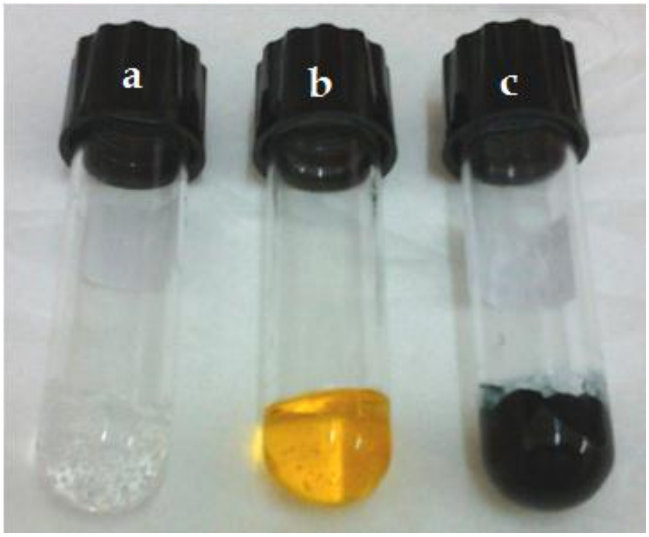

Figure S1- *Photographs of (**a**) hexagonal mesophases in the presence of 0.1 M EDOT and in the absence of $FeCl_3$ (**b**) mesophases doped with chemical oxidant $FeCl_3$ at 0.1 M in the absence of EDOT and (**c**) hexagonal liquid crystals prepared in the presence of both EDOT and $FeCl_3$. The color change indicates the oxidation of EDOT monomers by $FeCl_3$.*

Figure S2

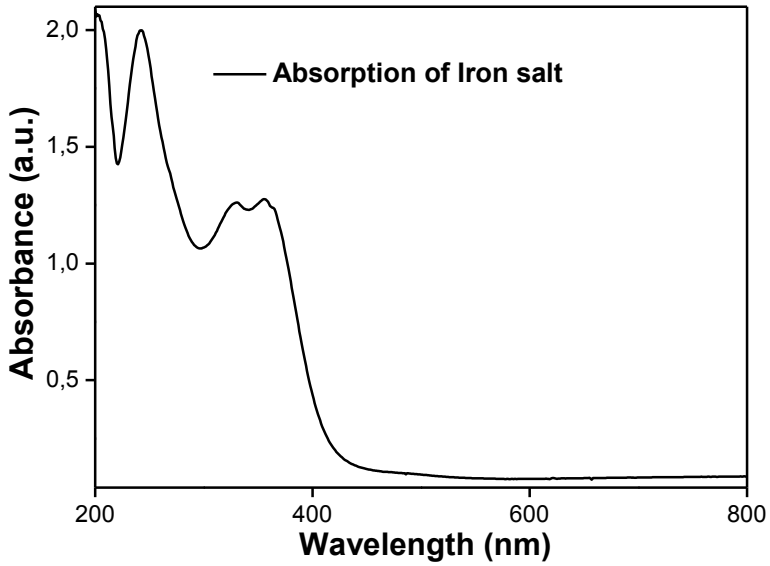

Figure S2- *Absorption spectrum of ethanolic solution containing 0.1 M in $FeCl_3$ used as chemical oxidant for the oxidation of EDOT monomers. The optical path length was 0.1 cm. The reference was ethanol.*

Figure S3

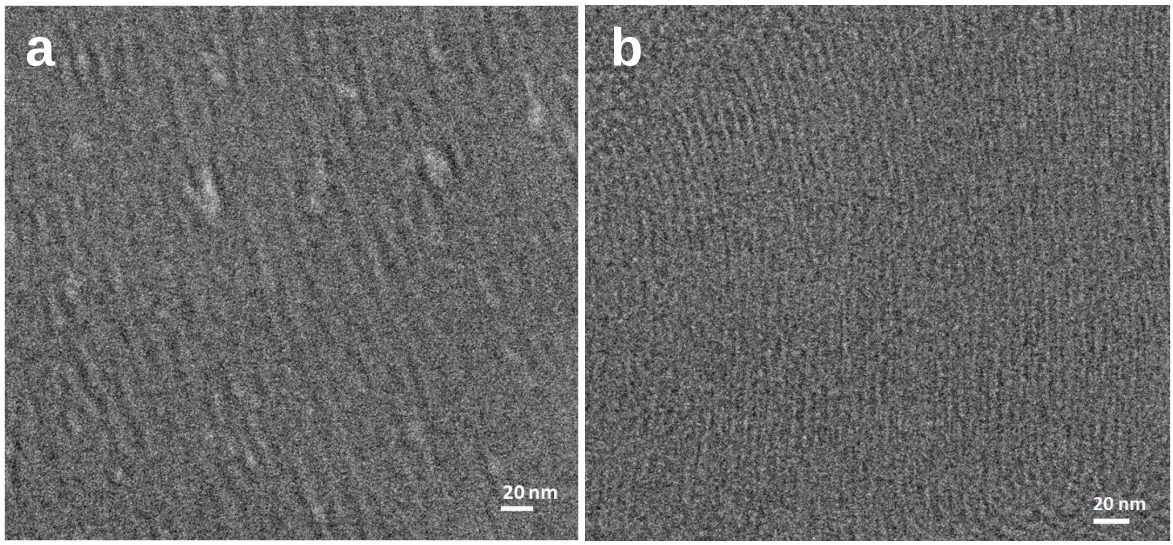

Figure S3- *Cryo-TEM images of hexagonal mesophases in the absence (**a**) and in the presence (**b**) of both 0.1 M EDOT and 0.1 M* $FeCl_3$.

Figure S4

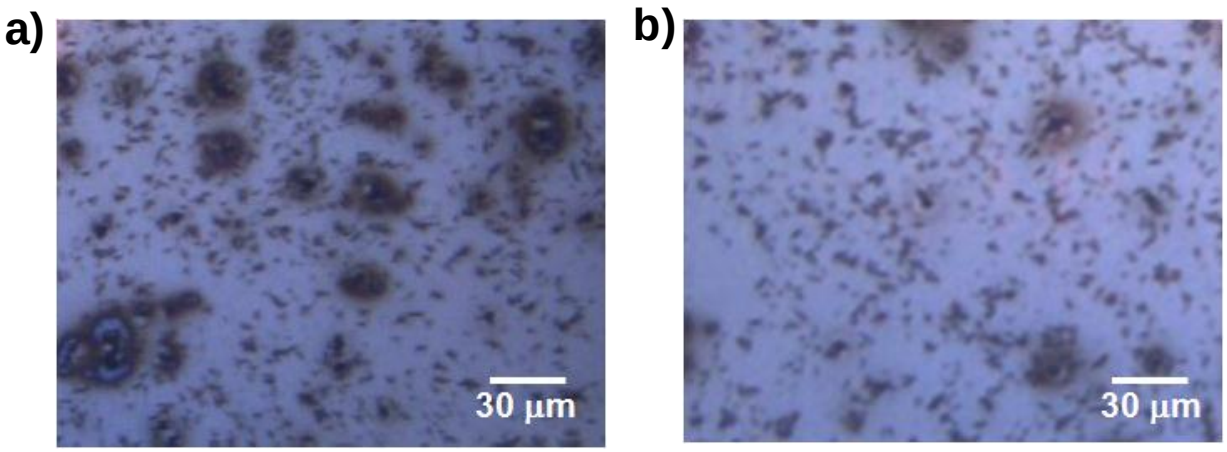

Figure S4- *Optical images of PEDOT polymers deposited on ZnSe prism after extraction from hexagonal mesophases. For PEDOT synthesis, 0.1 M in EDOT and 0.1 M in $FeCl_3$ were used at 0.1 M in NaCl (**a**) or 0.3 M in NaCl (**b**).*

Figure S5

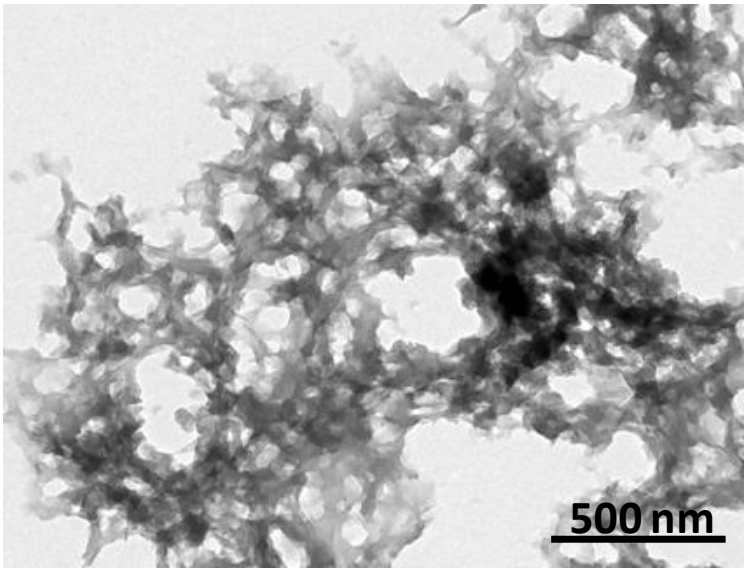

Figure S5- *TEM image of PEDOT polymers synthesized in bulk solution (without using the swollen hexagonal mesophases). 0.1 M in EDOT and 0.1 M in $FeCl_3$ were used for PEDOT preparation.*

Figure S6

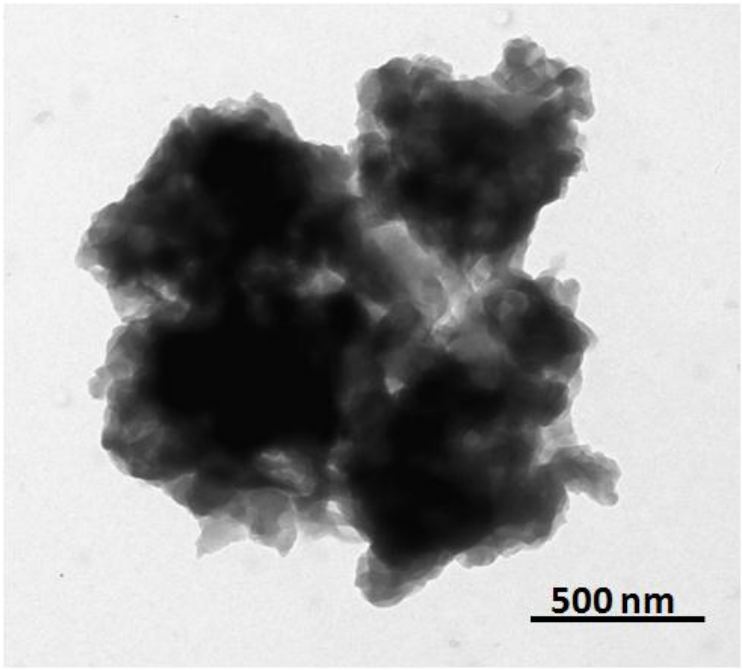

Figure S6- *TEM image of PEDOT polymers first synthesized in bulk solution using 0.1 M in EDOT and 0.1 M in $FeCl_3$, then incorporated in mesophases and finally extracted from these latter thanks to our optimized extraction procedure.*