Iron (II) metallo-supramolecular polymers based on thieno[3,2-*b*]thiophene for electrochromic applications

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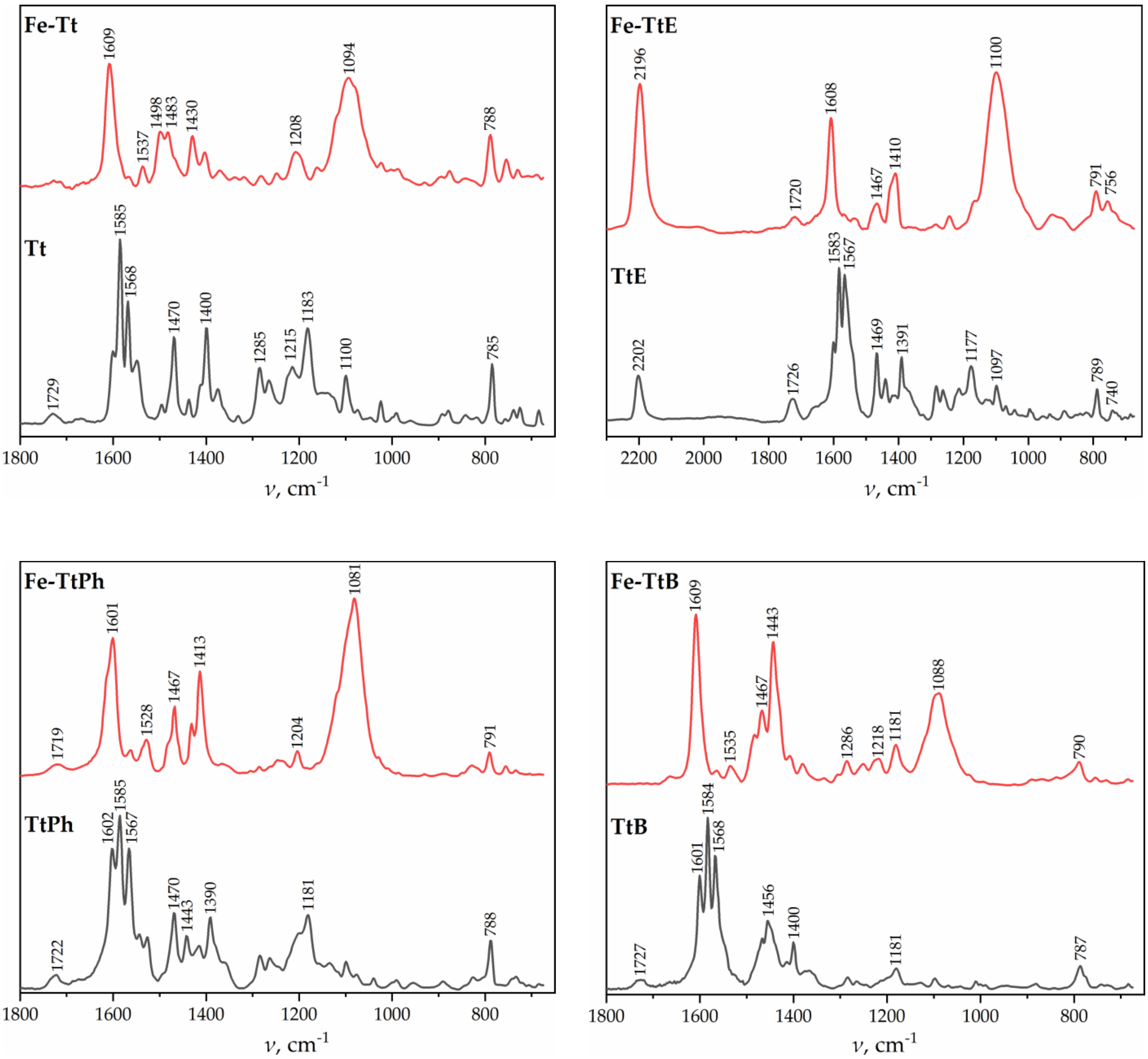


Figure S1. IR spectra of unimers and corresponding Fe-MSPs.

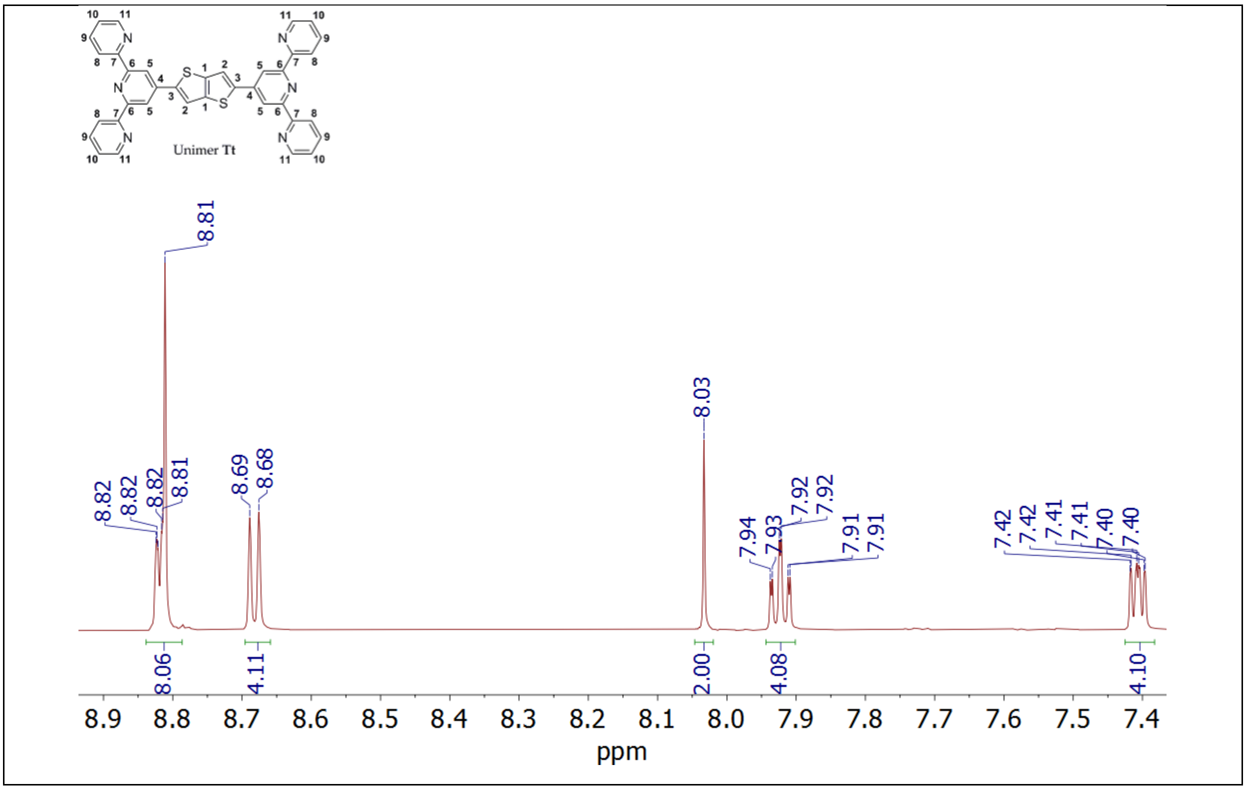


Figure S2. ^{1}H NMR spectra of unimer **Tt**.

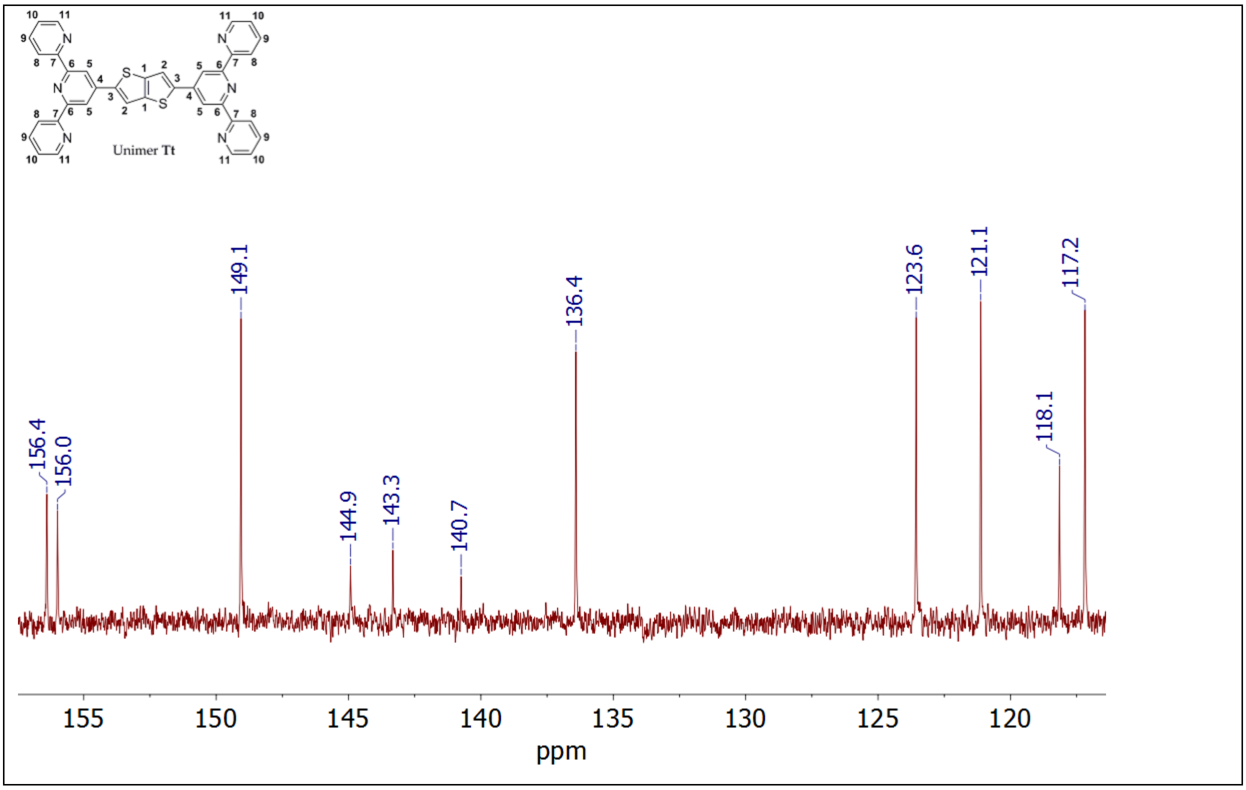


Figure S3. ^{13}C NMR spectra of unimer **Tt**.

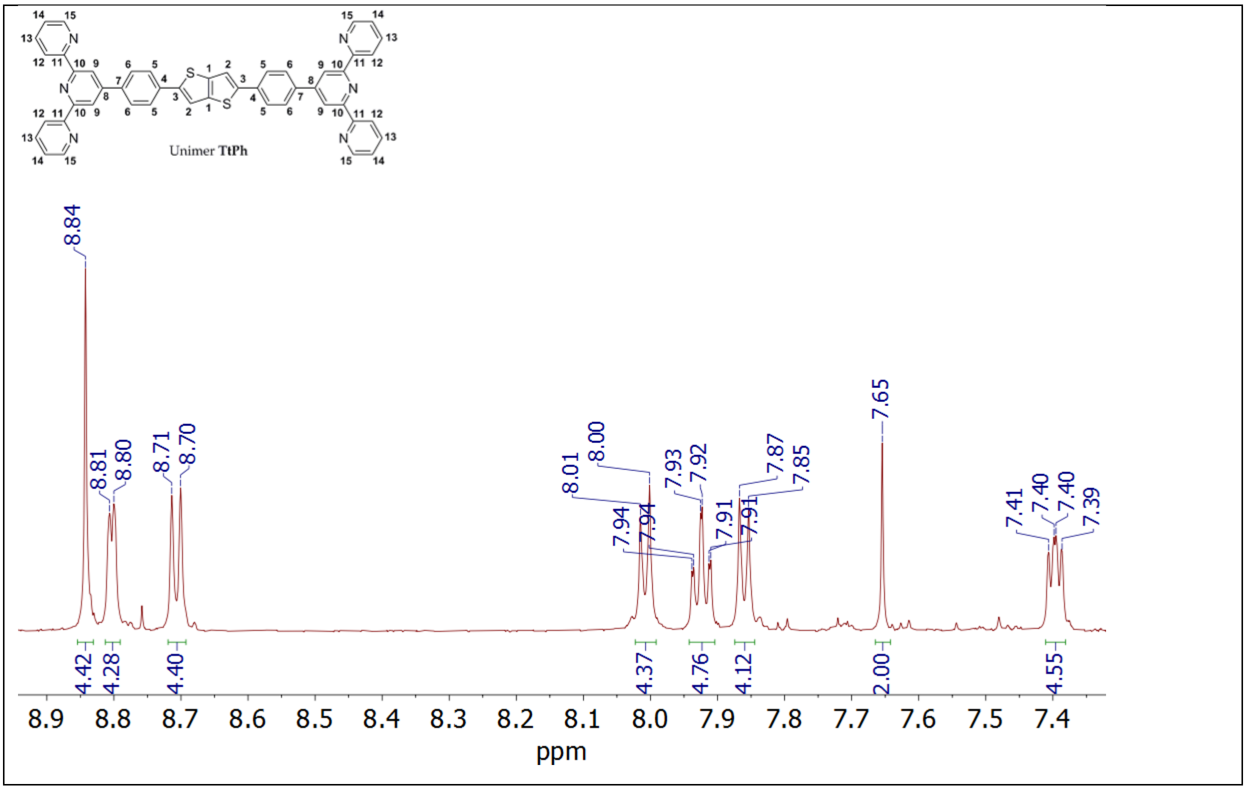


Figure S4. [1]H NMR spectra of unimer **TtPh**.

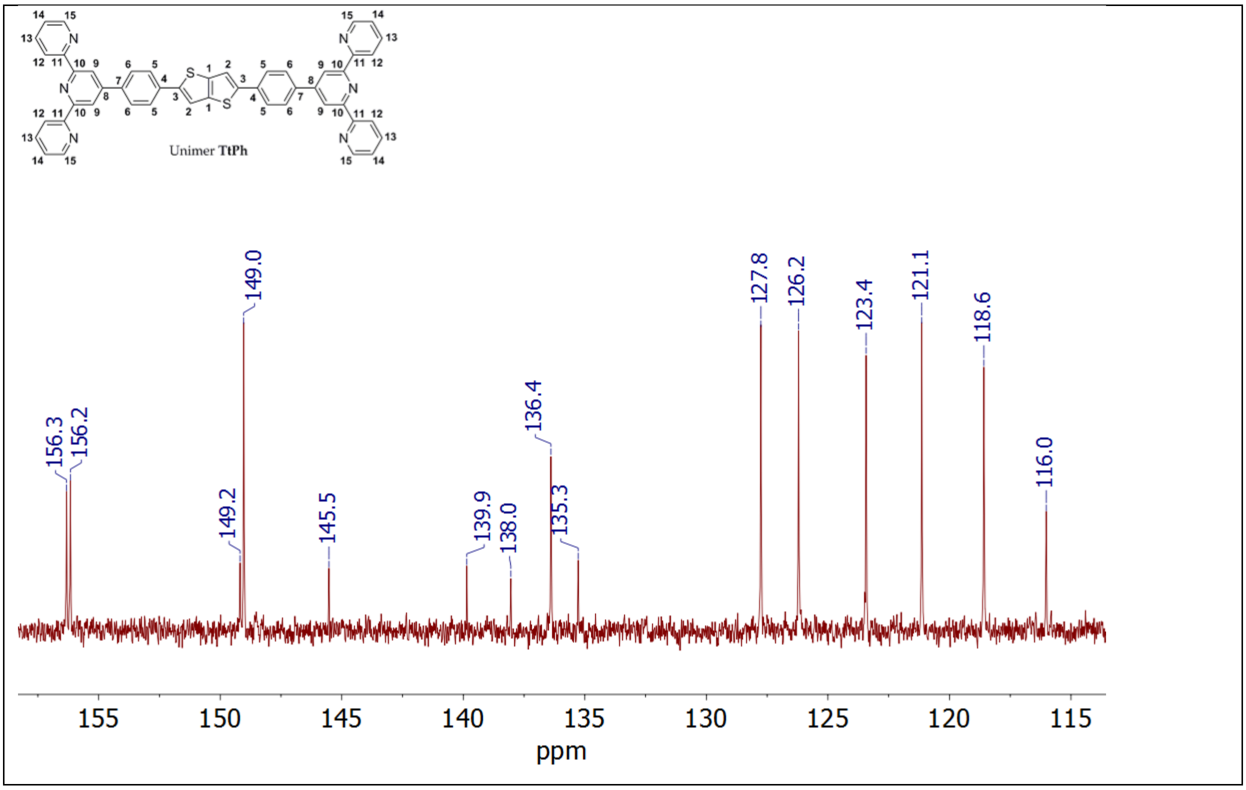


Figure S5. [13]C NMR spectra of unimer **TtPh**.

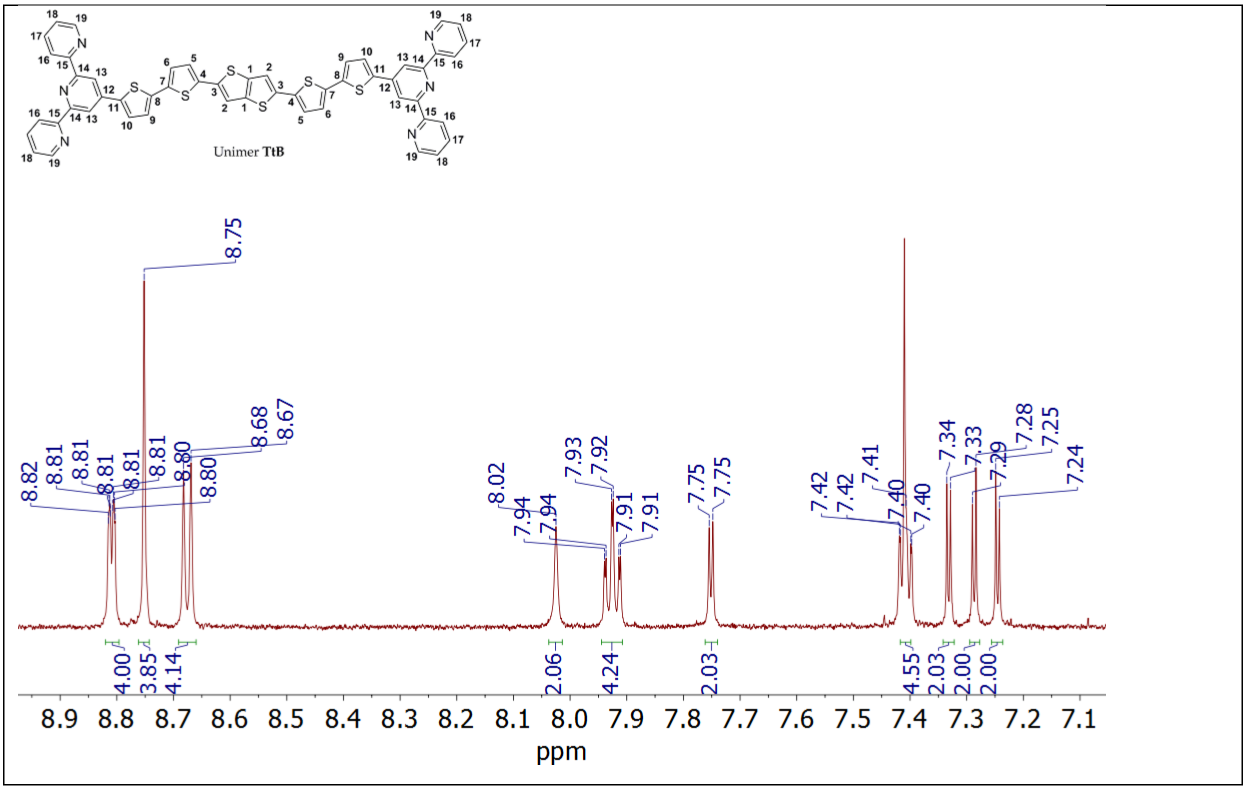


Figure S6. ^{1}H NMR spectra of unimer **TtB**.

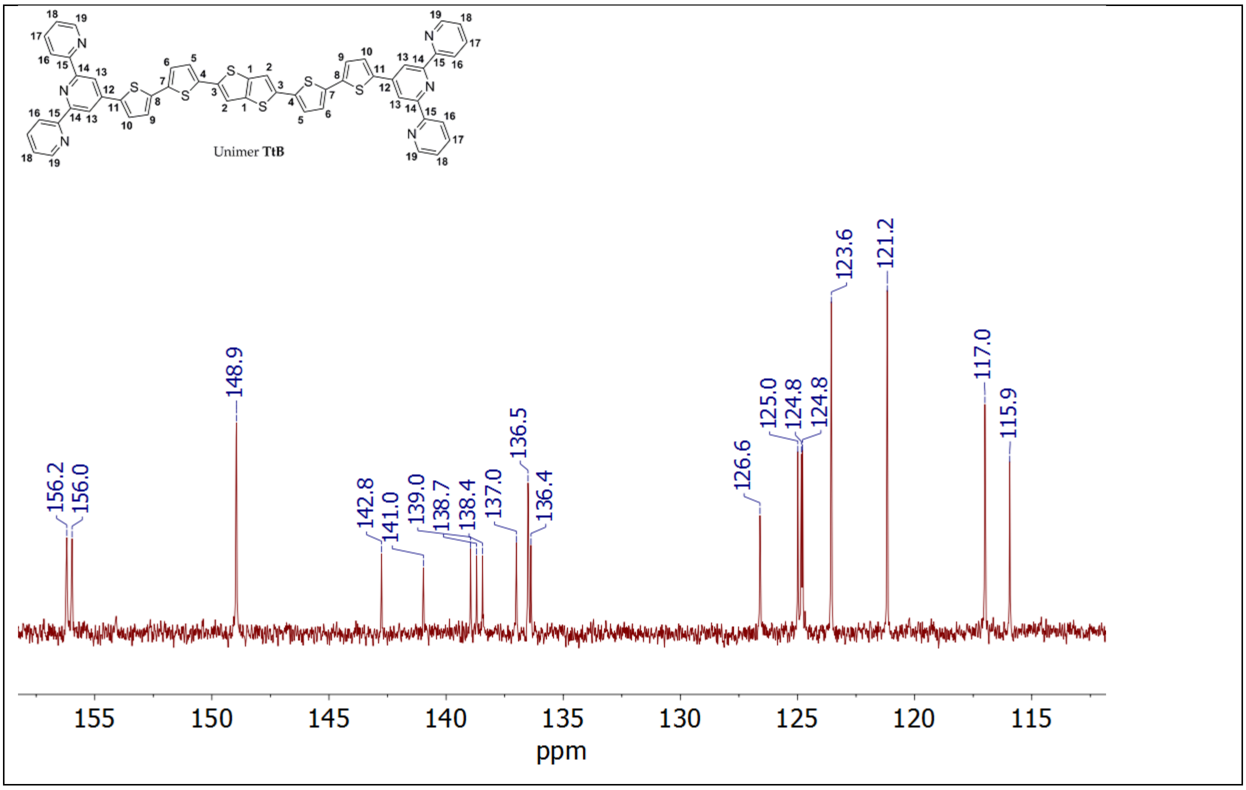


Figure S7. ^{13}C NMR spectra of unimer **TtB**.

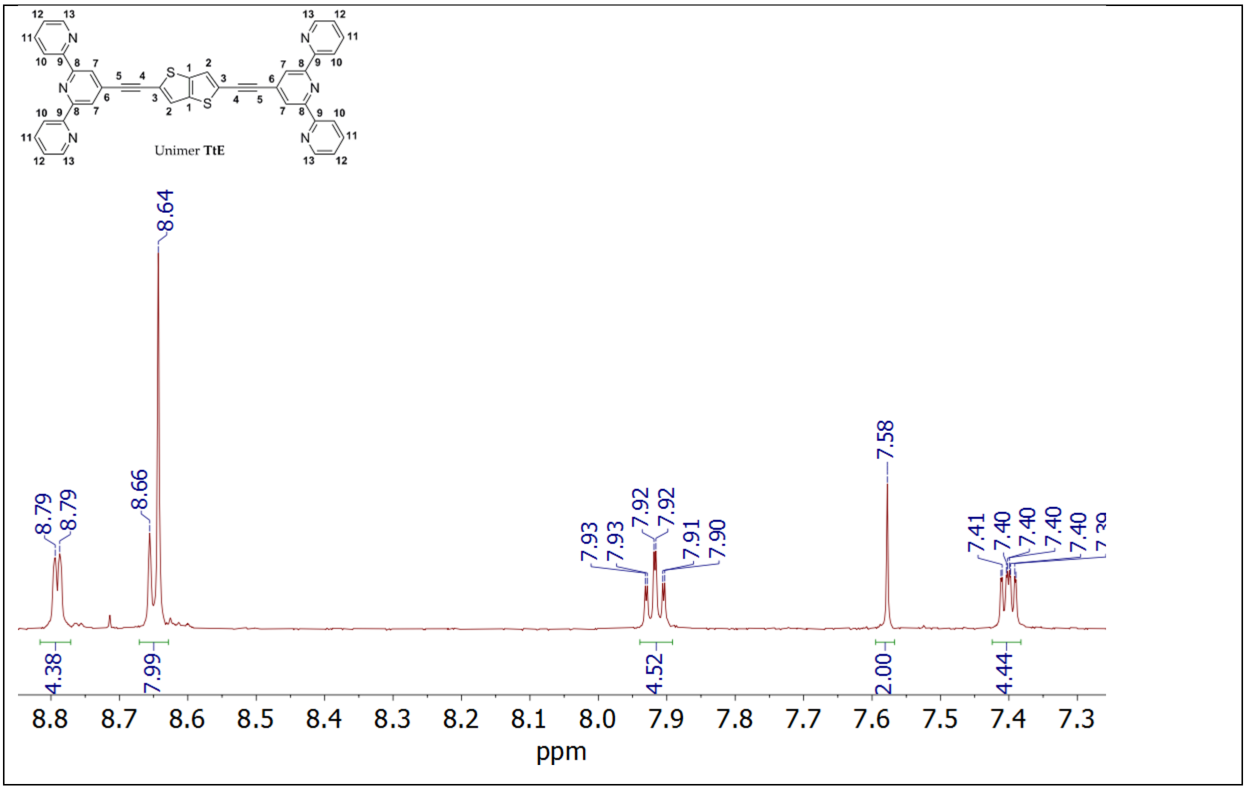


Figure S8. ^{1}H NMR spectra of unimer **TtE**.

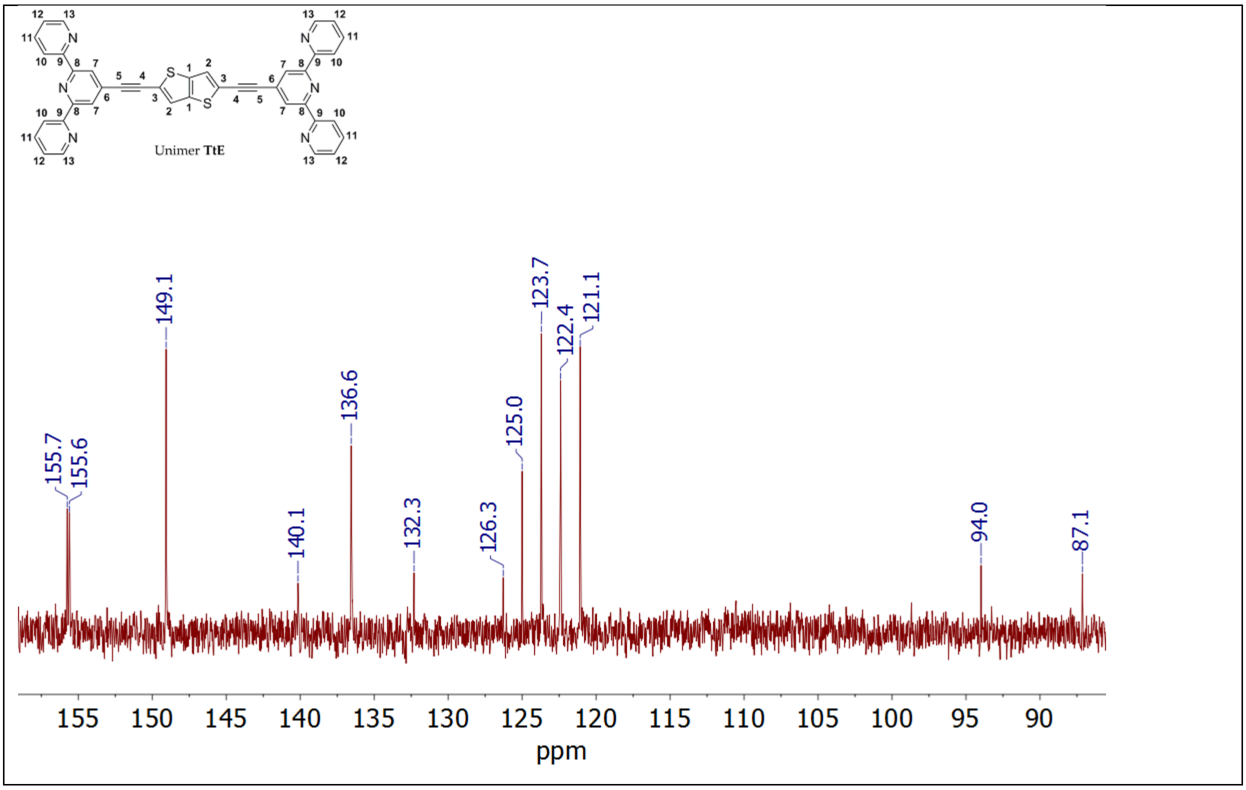


Figure S9. ^{13}C NMR spectra of unimer **TtE**.

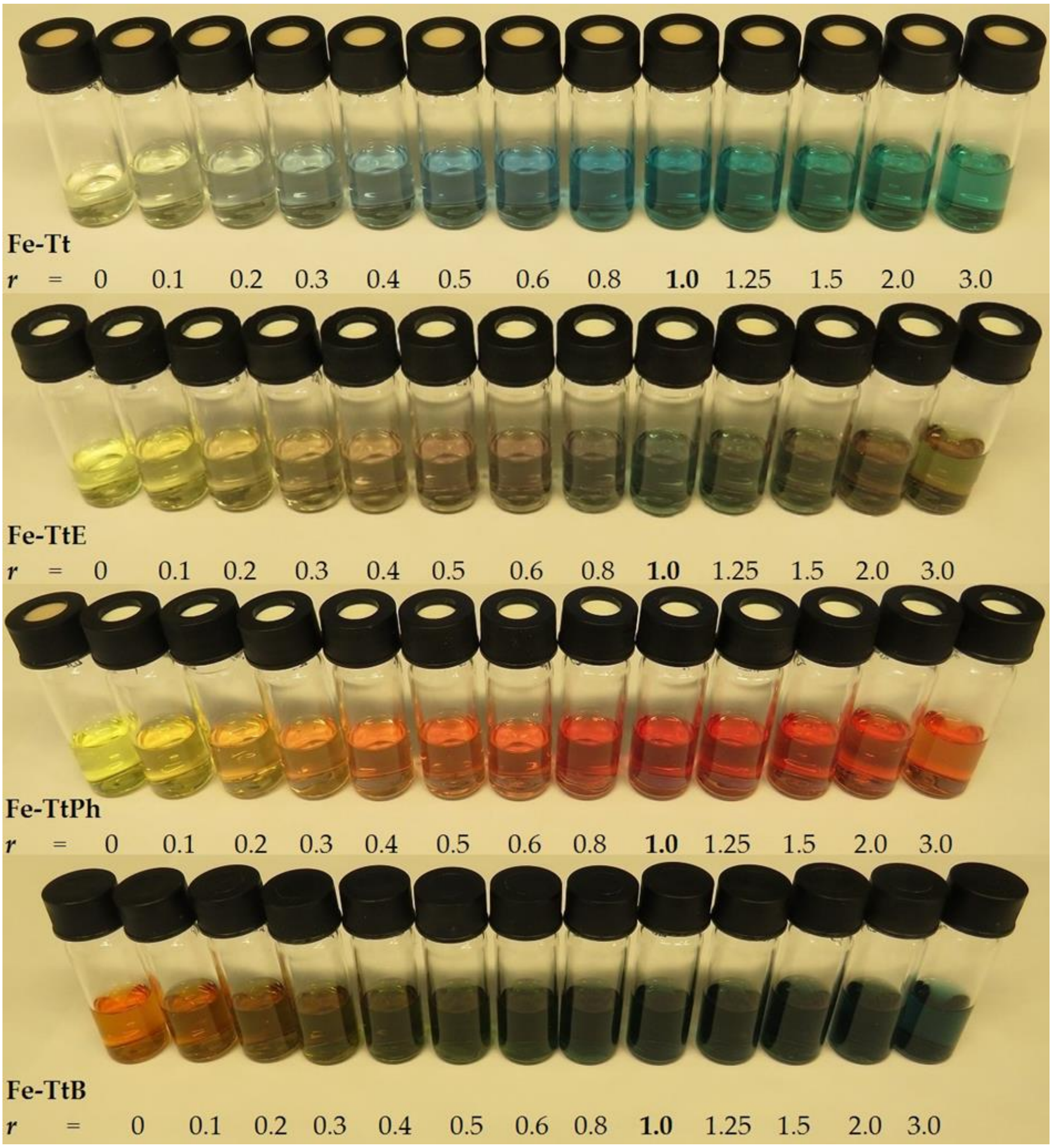


Figure S10. Solutions with gradually increasing ratio r = $[Fe^{2+}]/[U]$ clearly show the effect of linker on the color of metallo-supramlecular oligomers and polymers.

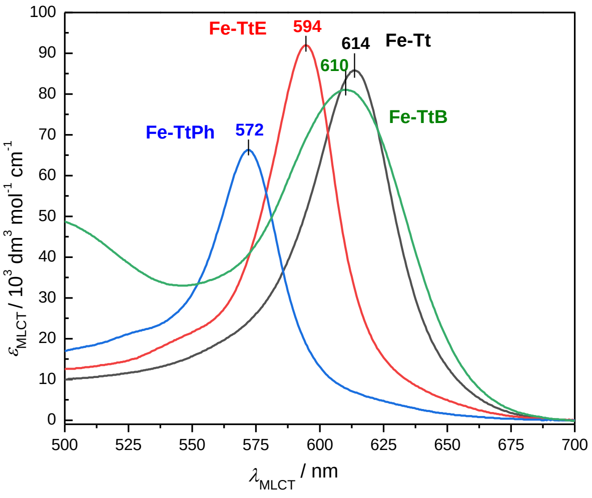


Figure S11. Comparison of the position and intensity of MLCT bands of Fe-MSPs (r = 1) solutions.

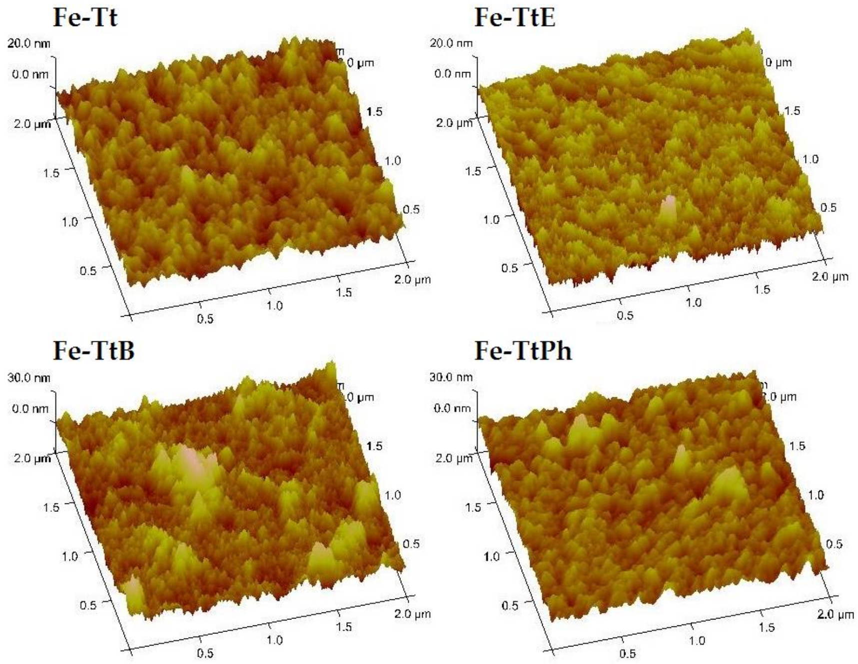
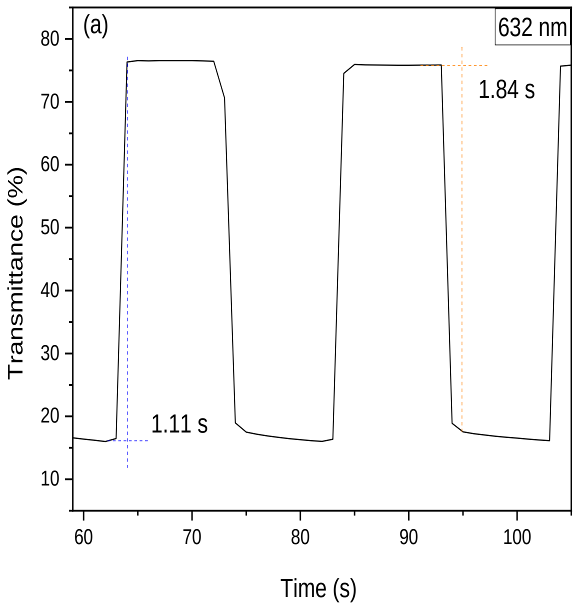
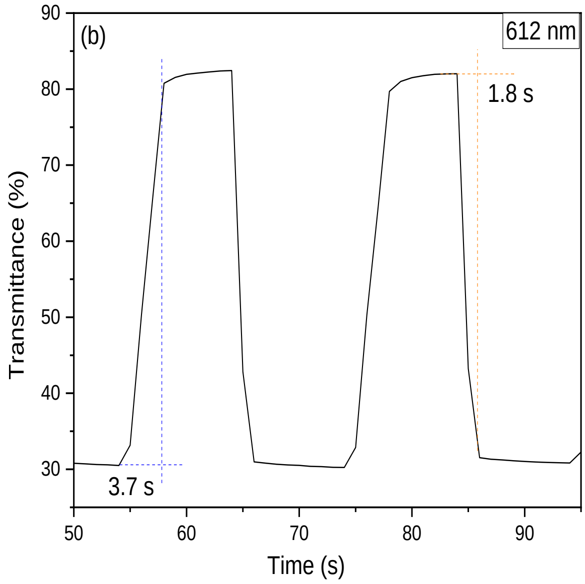


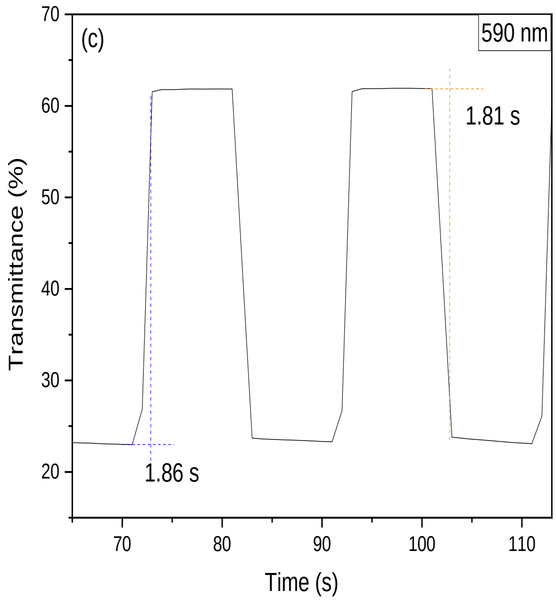
Figure S12. AFM images of Fe^{2+}-MSP films (tapping mode, clockwise).



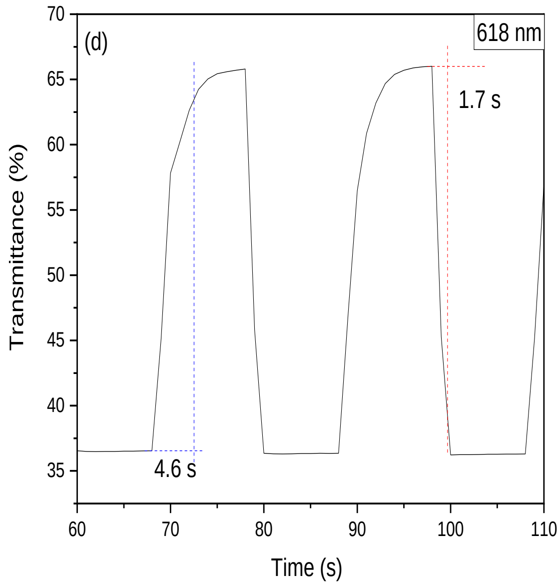
Fe-Tt



Fe-TtE



Fe-TtPh



Fe-TtB

Figure S13. Determination of the bleaching and coloring time of electrochromic films from 95 % of saturated transmission. (a) **Fe-Tt;** (b) **Fe-TtE;** (c) **Fe-TtPh**; and (d) **Fe-TtB.**

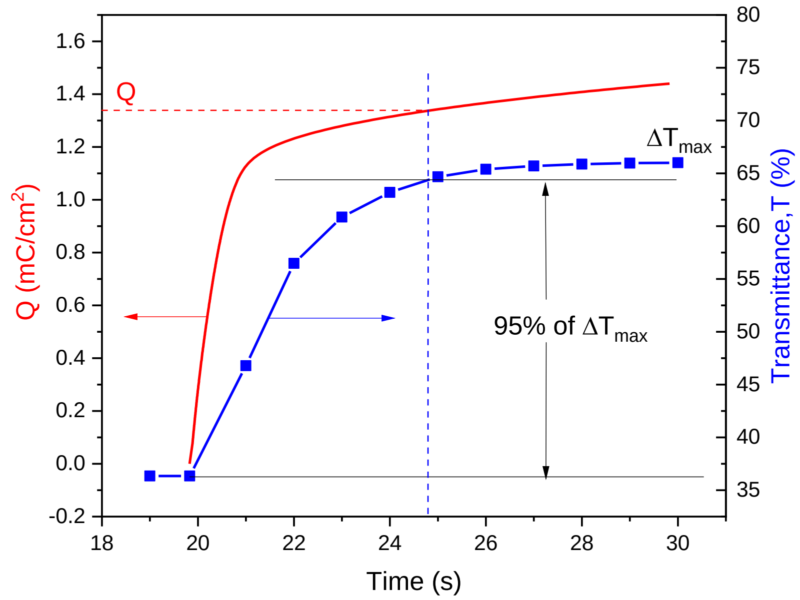


Figure S14. Time courses of the transmittance, T, at $\lambda = 618$ nm of the **Fe-TtB** electrochromic layer and the charge passed through the layer, Q, during its bleaching. The charge needed to achieve 95% of the final saturated transmittance was used for the calculation of the coloration efficiency

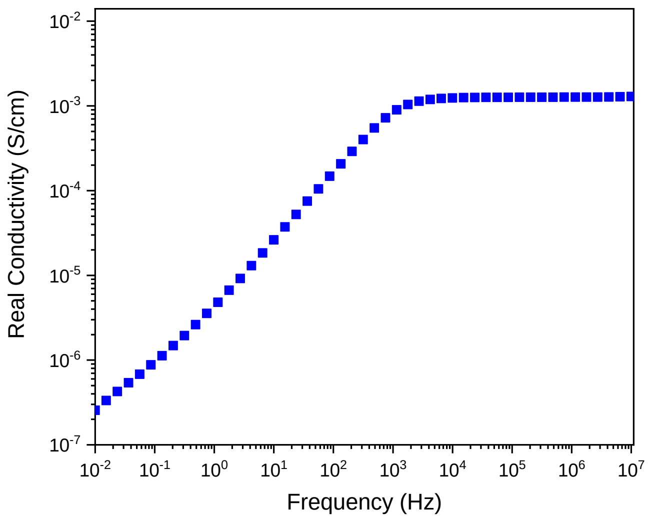


Figure S15. Frequency dependence of the real part of the conductivity of gel electrolyte.

Randles-Ševčik equation [35,36] for temperature of 25 °C is:

$$i_p = 269 \cdot c \cdot D^{1/2} \cdot v^{1/2}$$

where: i_p is the current density of CV peak, c the molar concentration (in mol/L) and D diffusion coefficient (in $cm^2 s^{-1}$) of electroactive species and v the scan rate (in $V \cdot s^{-1}$).