

Electronic Supplementary Information

for

**Nanostructured metallo-supramolecular polymer
based gel-type electrochromic devices with
ultrafast switching time and high colouration
efficiency**

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1. Molecular weight measurements by SEC-viscometry-RALLS method

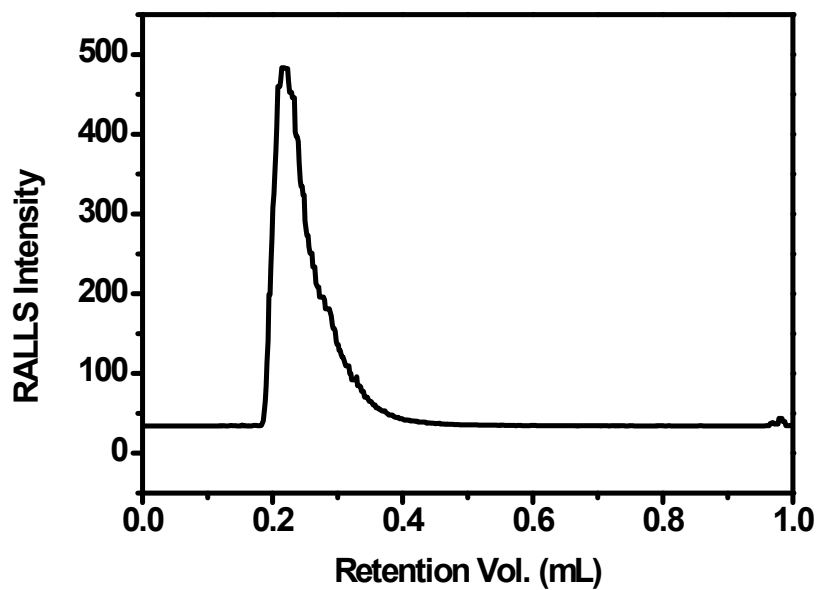


Fig. S1 The SEC-viscometry-RALLS trace for molecular weight measurement of polyFe in methanol solution by at room temperature.

2. Scan rate dependent cyclic voltammetry study

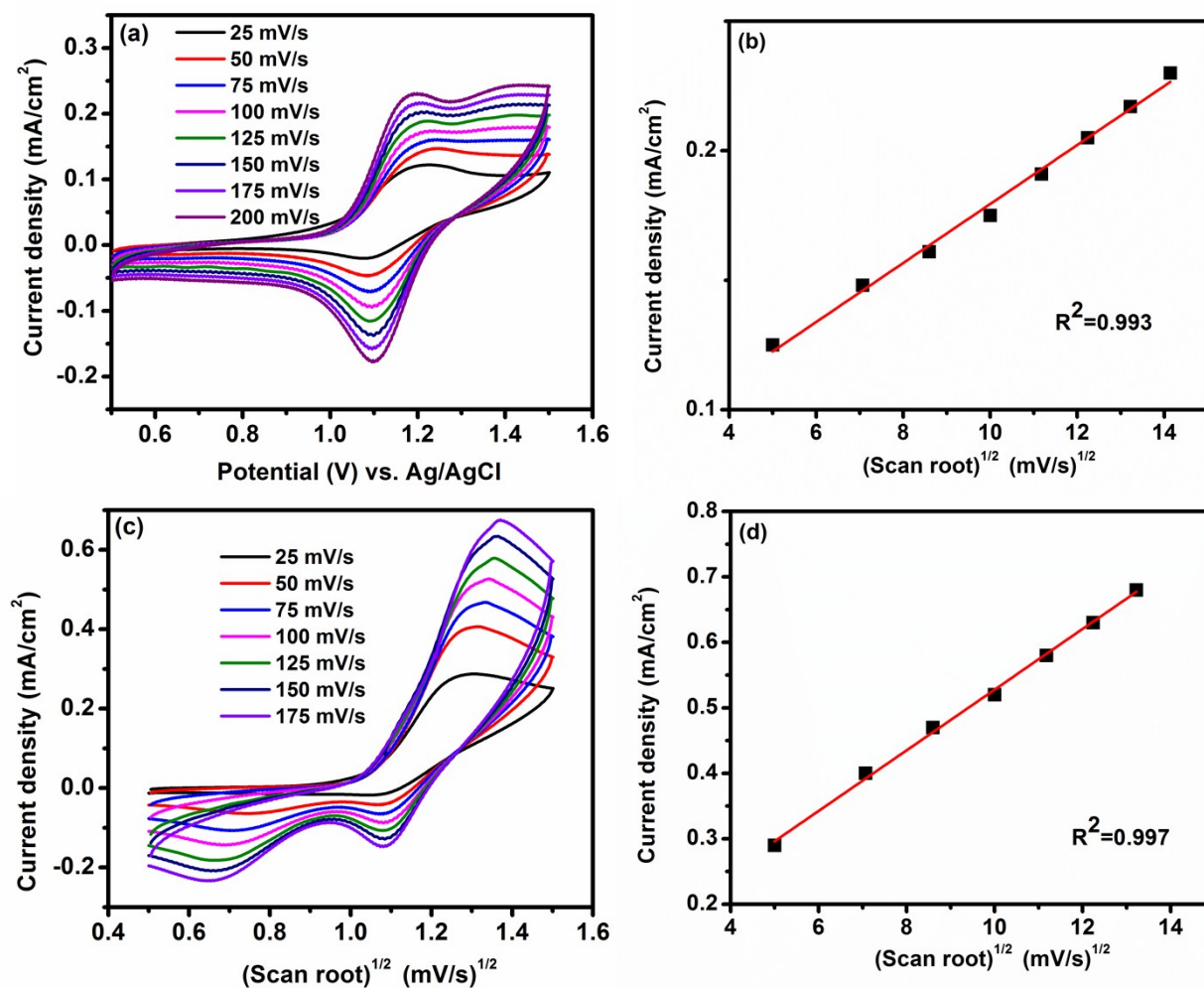


Fig. S2 (a) CV of PSS-polyFe11 films on GCE with different scan rates (25–200 mV/s) in a 0.1 M tetrabutylammonium perchlorate in acetonitrile electrolyte. (b) Relation of anodic peak current in the oxidation of the Fe²⁺ ions with the square root of the scan rate in the polyFe11 film. (c) CV of PSS-polyFe21 films in above-mentioned condition, and (d) Relation of anodic peak current with the square root of the scan rate in the PSS-polyFe21 film.

3. Thickness measurement of films by cross-sectional SEM images

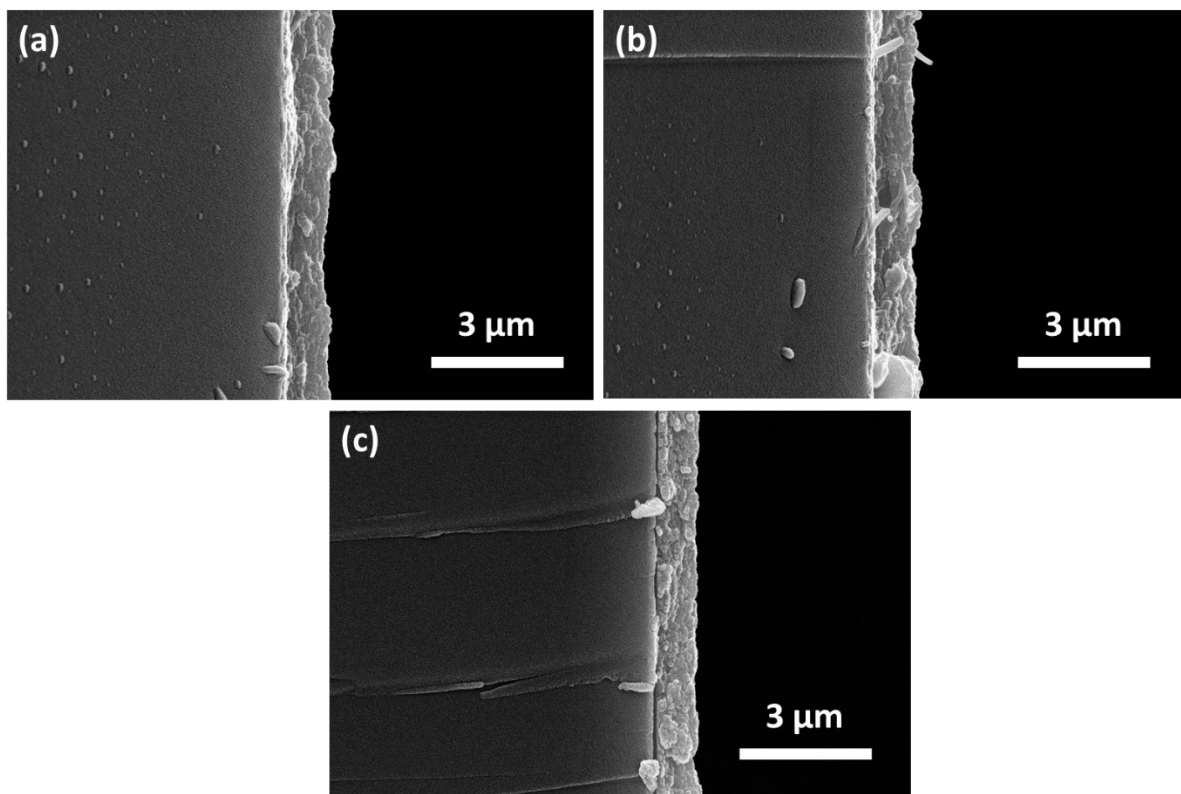


Fig. S3 The cross-sectional SEM images of the EC films containing (a) polyFe, (b) PSS-polyFe12 and (c) PSS-polyFe11.

4. Calculation of colouration and bleaching time

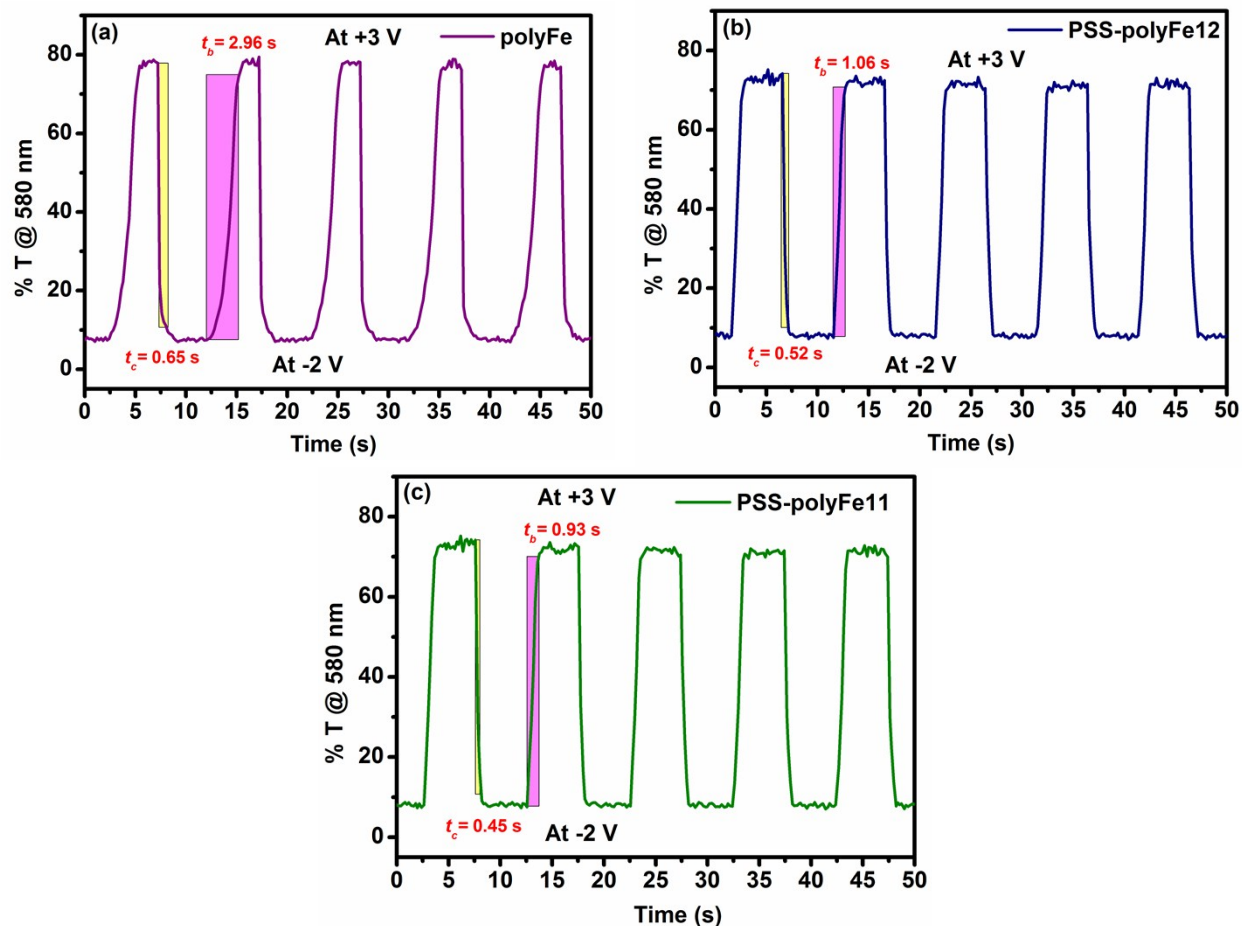


Fig. S4 The first five cycles of transmittance changes with time upon chronoamperometric potential switching between -2 V and +3 V of (a) polyFe, (b) PSS-polyFe12, and (c) PSS-polyFe11. Corresponding bleaching time (t_b) and colouration time (t_c) (the time needed for 95% change of ΔT) for the disappearance and reappearance of MLCT absorption in ECDs.

5. Chronoamperometry study to calculate charge/discharge

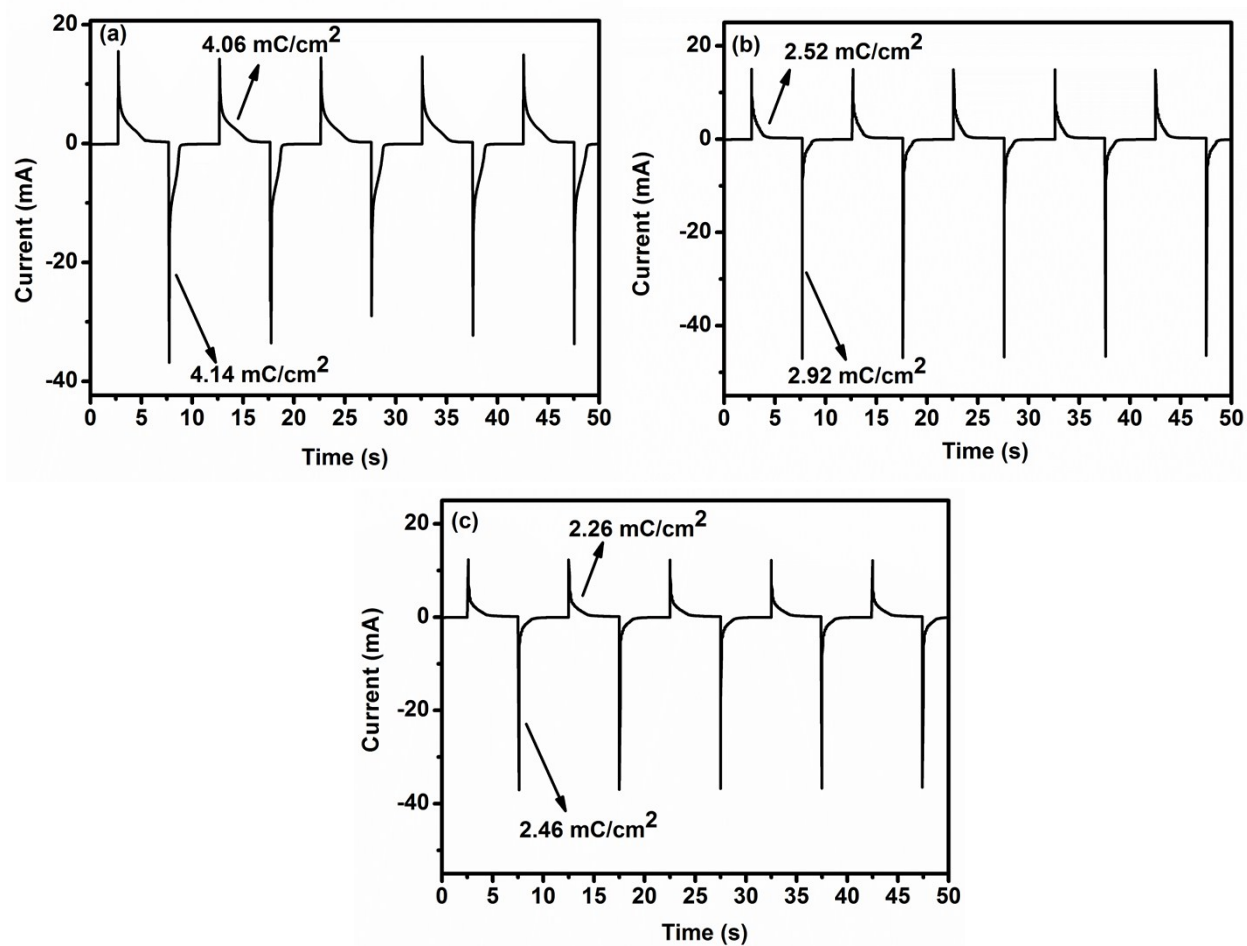


Fig. S5 Double potential chronoamperometric switching between +3 V and -2 V and corresponding charge/discharge amounts of (a) polyFe, (b) PSS-polyFe12, and (c) PSS-polyFe11.