Supporting Information

Ambipolar polyimides with pendant groups based on *9H*-thioxanthene-9-one derivatives: synthesis, thermostability, electrochemical and electrochromic properties

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IR spectra of the synthesized polyimides

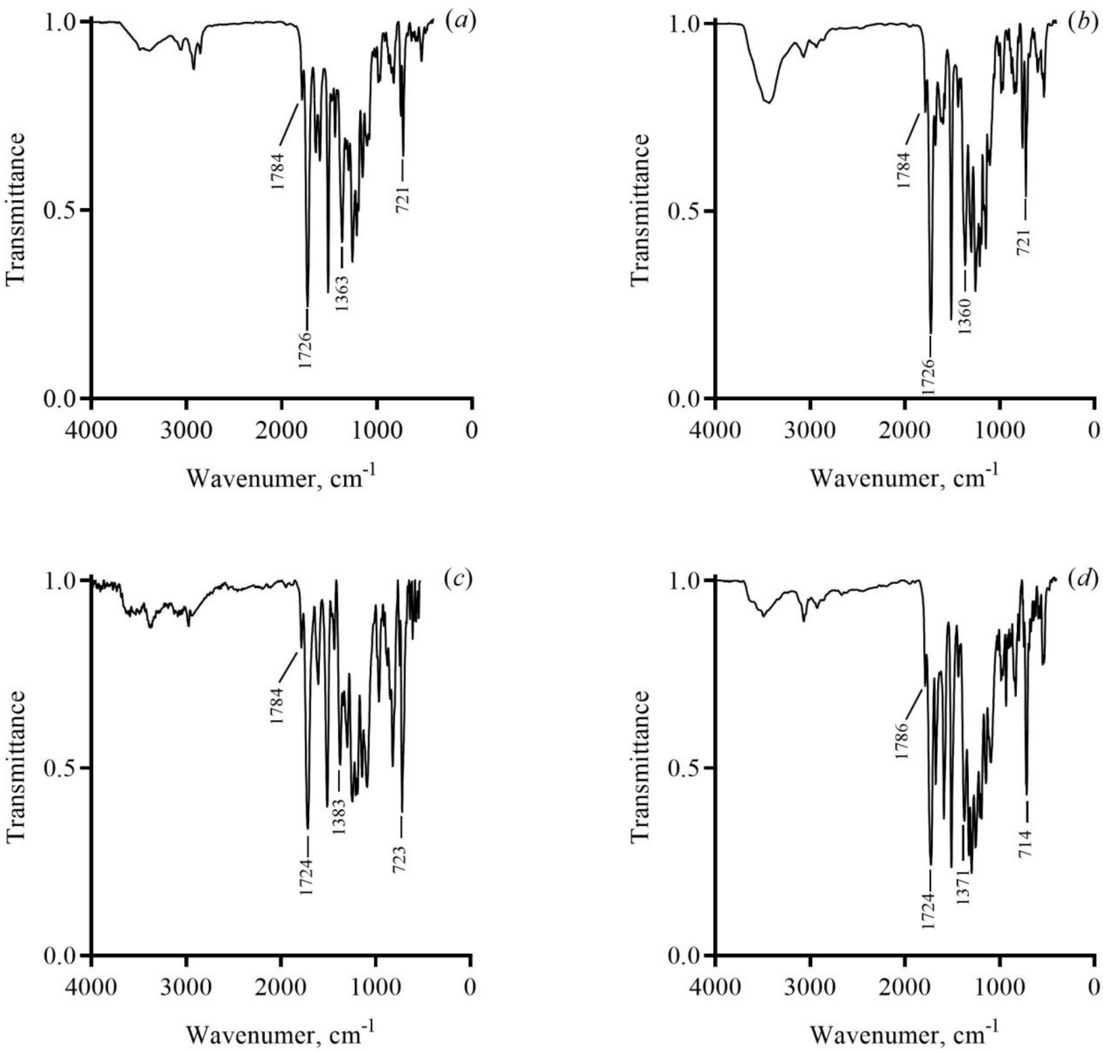

Figure S1. IR spectra of **PIs 1-4:** (*a*) **PI 1**, (*b*) **PI 2**, (*c*) **PI 3**, (*d*) **PI 4.**

IR spectra show characteristic asymmetrical and symmetrical stretching frequencies of the C=O groups at 1784±2, 1724±2 cm^{-1}, respectively, C- N stretching frequencies at 1364±7 cm^{-1}, and bending vibrations of the C=O group at 721±7 cm^{-1}.

Electrochemical properties

Electrochemical reduction of 6-FDA

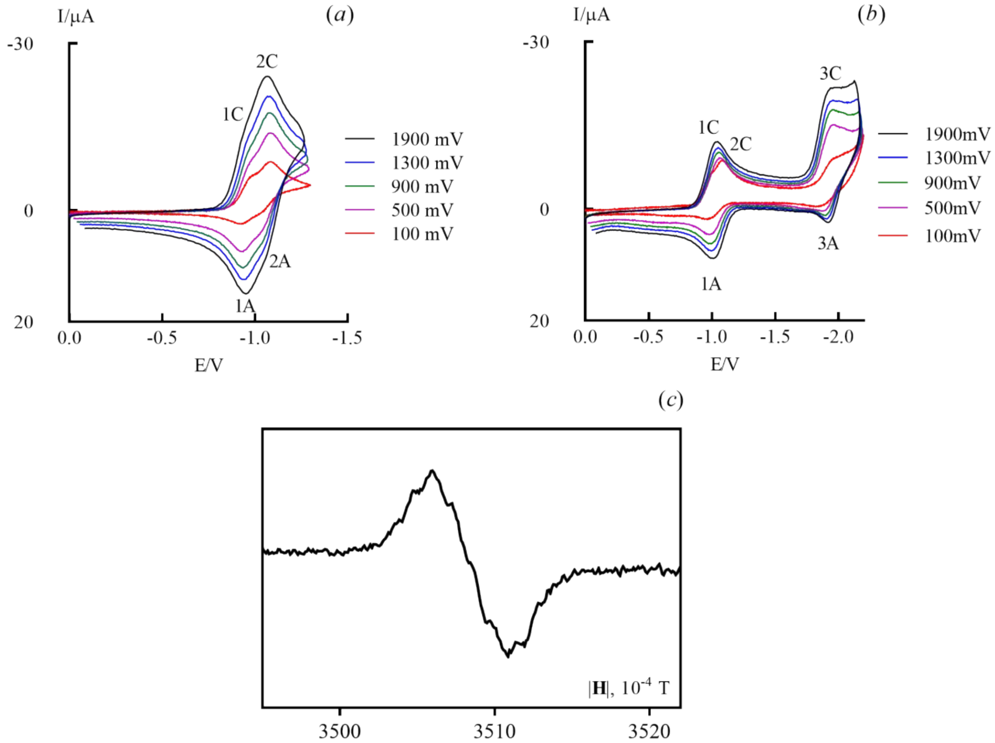

Figure S2. (*a*) Cyclic voltammogramms of 6-FDA in DMF in the potential sweep range 0.0>*E*>−1.3 V, (*b*) in the potential sweep range 0.0>*E*>−2.1 V at various potential sweep rates (indicated by color), (*c*) EPR spectrum of the 6-FDA radical anion obtained by stationary electrolysis at the potential -1.3 V in DMF.

*Electrochemical oxidation of **PIs 1-4**.*

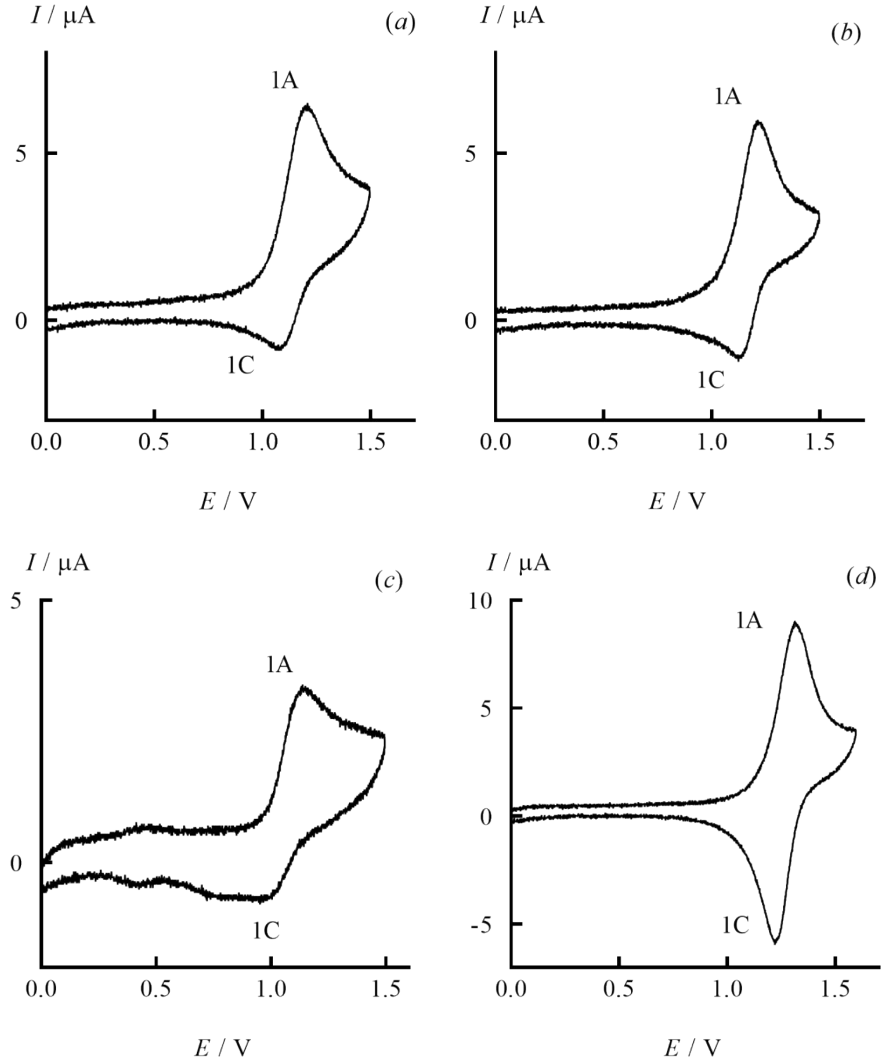

Figure S3. Cyclic voltammograms of **PIs 1-4:** (*a*) **PI 1**, (*b*) **PI 2**, (*c*) **PI 3**, (*d*) **PI 4** in MeCN in oxidative region of potentials.

Optical properties of PI 1-4 films.

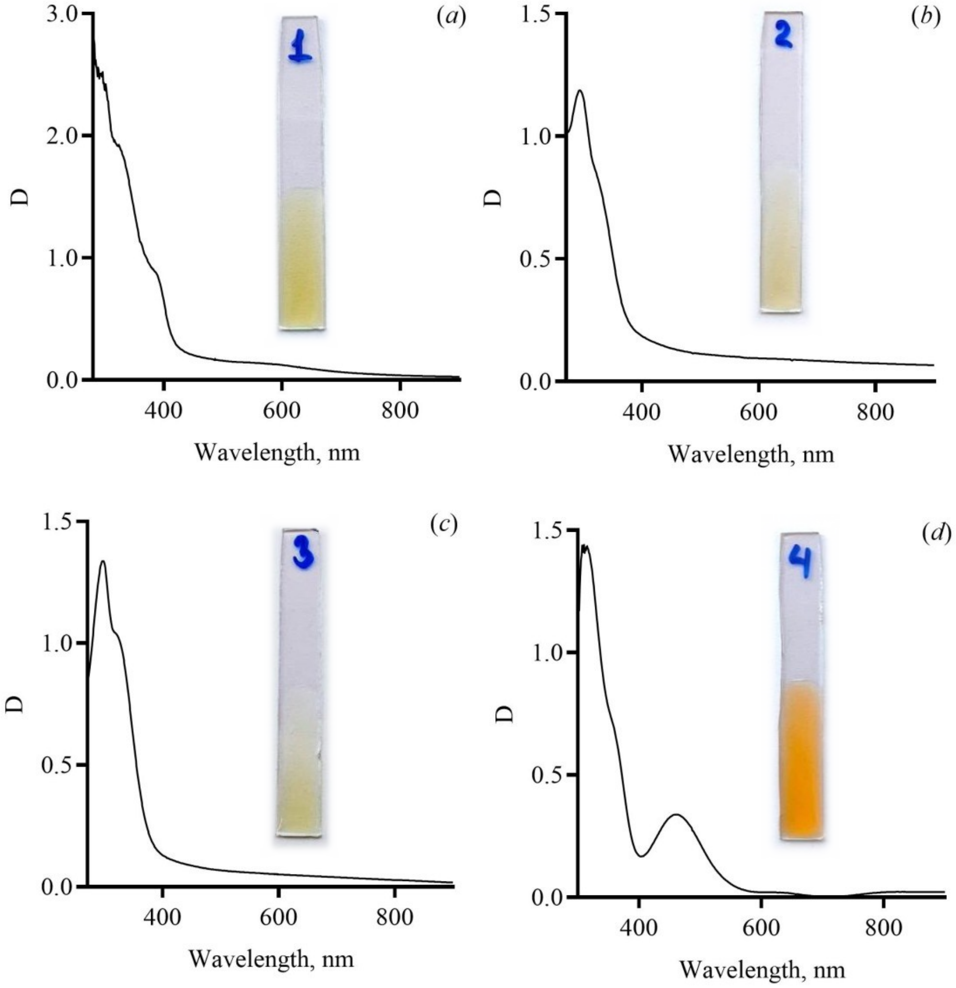

Figure S4. UV-VIS-NIR spectra of **PI 1-4** films: (*a*) **PI 1**, (*b*) **PI 2**, (*c*) **PI 3**, (*d*) **PI 4** together with images of the films deposited on the surface of ITO electrodes.

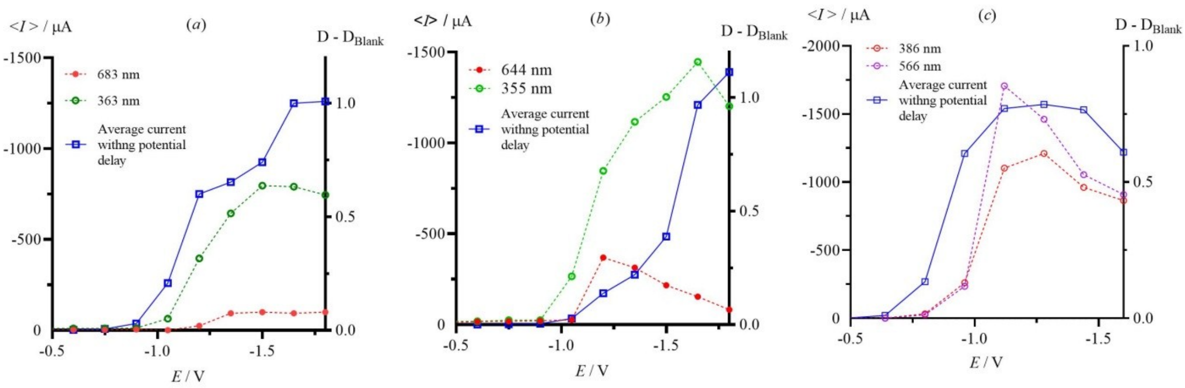

Figure S5. Dependences of the current averaged over the potential delay step (10s) (left axis) and the selected absorption bands (indicated by color, right axis) on the applied potential: (*a*) **PI 1**, (*b*) **PI 2**, (*c*) **PI 4**.

The average current value was obtained by averaging the current decay over the time interval of the potential step (t_{step}) using the following equation: $< I > = \left(\int_0^{t_{step}} I(t)dt \right) \Big/ t_{step}$

Equipment.

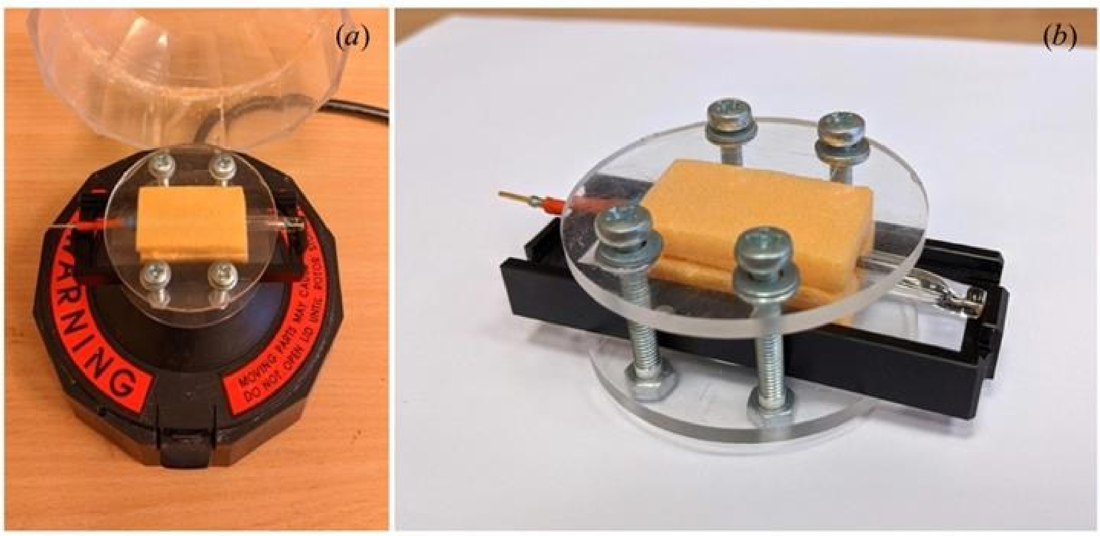

Figure S6. *(a)* Mini-centrifuge with a modified nozzle for centrifuging Pt-disk working electrodes for CV measurements and *(b)* a modified nozzle with a Pt-disk working electrode inside.

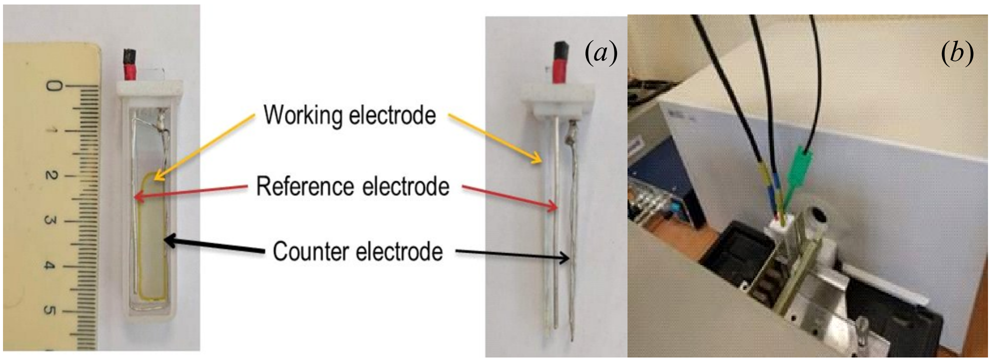

Figure S7. (*a*) Spectroelectrochemical cell for studying the electrochromic properties of polyimide films, and (*b*) its location in a one-beam UV-VIS-NIR spectrophotometer