Supplementary Material (ESI) for *Journal of Materials Chemistry*

Synthesis, Physical Properties and Field-Effect Transistors of Novel Thiazolothiazole/Phenylene Co-Oligomers**

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SUPPLEMENTARY INFORMATION

Optical and Electrochemical Measurements. UV-vis spectra were recorded on a SHIMADZU Multi Spec-150. Emission spectra were collected on a SHIMADZU RF-1500 spectrometer. Cyclic voltammogram (CV) was recorded on a BAS-100B system containing terabutylammonium hexafluorophoshate ($TBAPF_6$) (0.1mol dm^{-3} in dry CH_2Cl_2). The Pt disk, Pt wire and SCE were used as the working, counter, and reference electrodes, respectively.

X-ray Diffraction Measurements. X-ray diffraction (XRD) measurements were carried out with a JEOL JDX-3530 X-ray diffractometer system. XRD patterns were obtained using Bragg-Brentano geometry with CuKα radiation as an X-ray source with an acceleration voltage of 40 kV and a beam current of 30 mA.

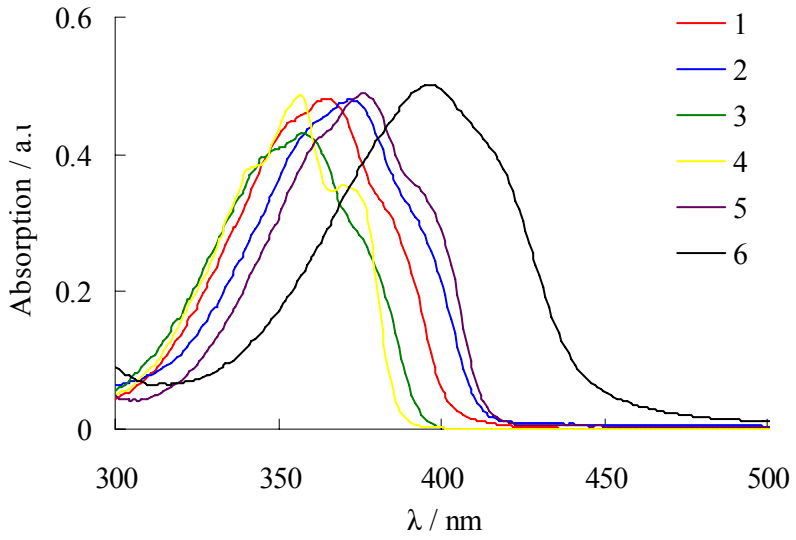


Fig. S1 Absorption spectra of **1**—**6** in $CHCl_3$.

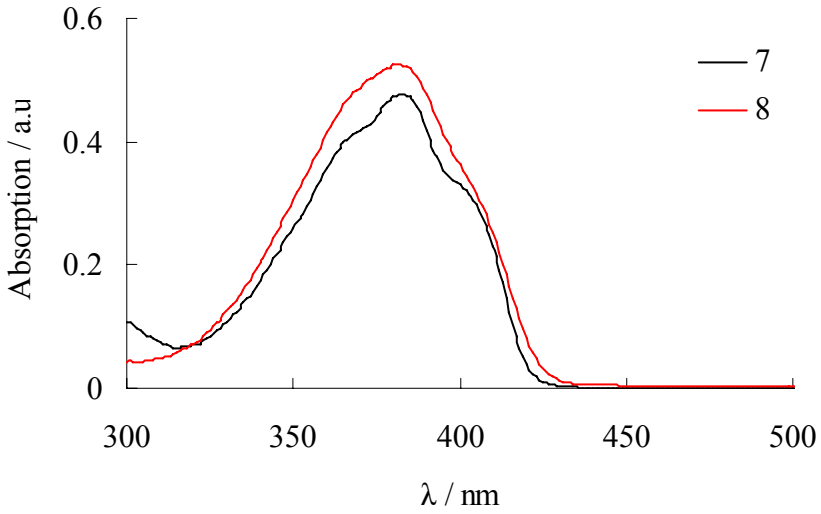


Fig. S2 Absorption spectra of **7**—**8** in $CHCl_3$.

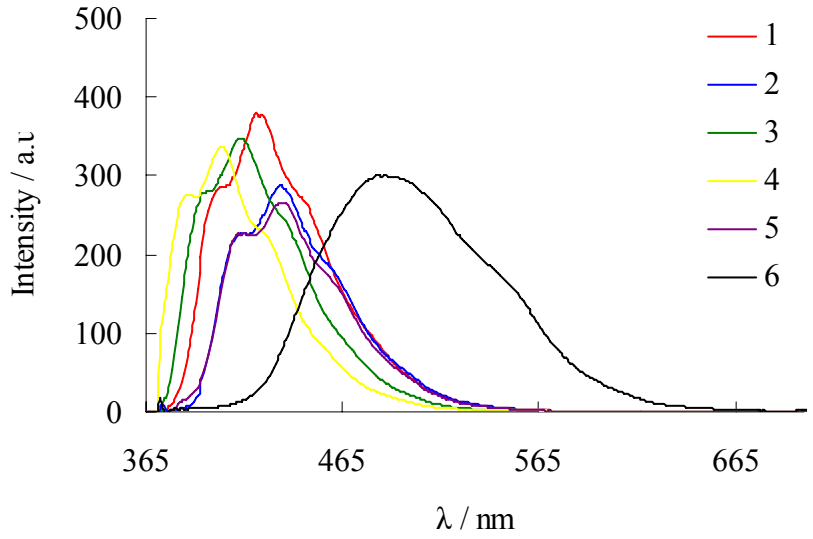


Fig. S3 Emission spectra of **1**—**6** in $CHCl_3$.

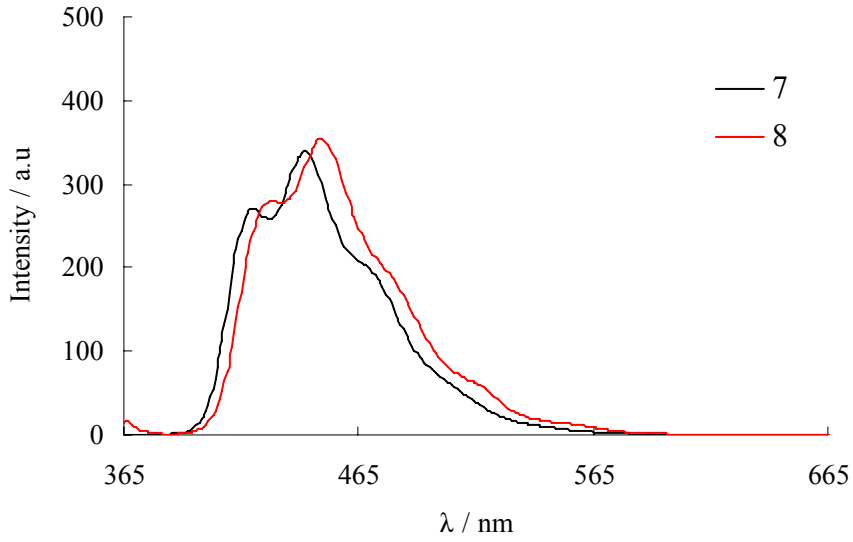


Fig. S4 Emission spectra of **7**—**8** in $CHCl_3$.

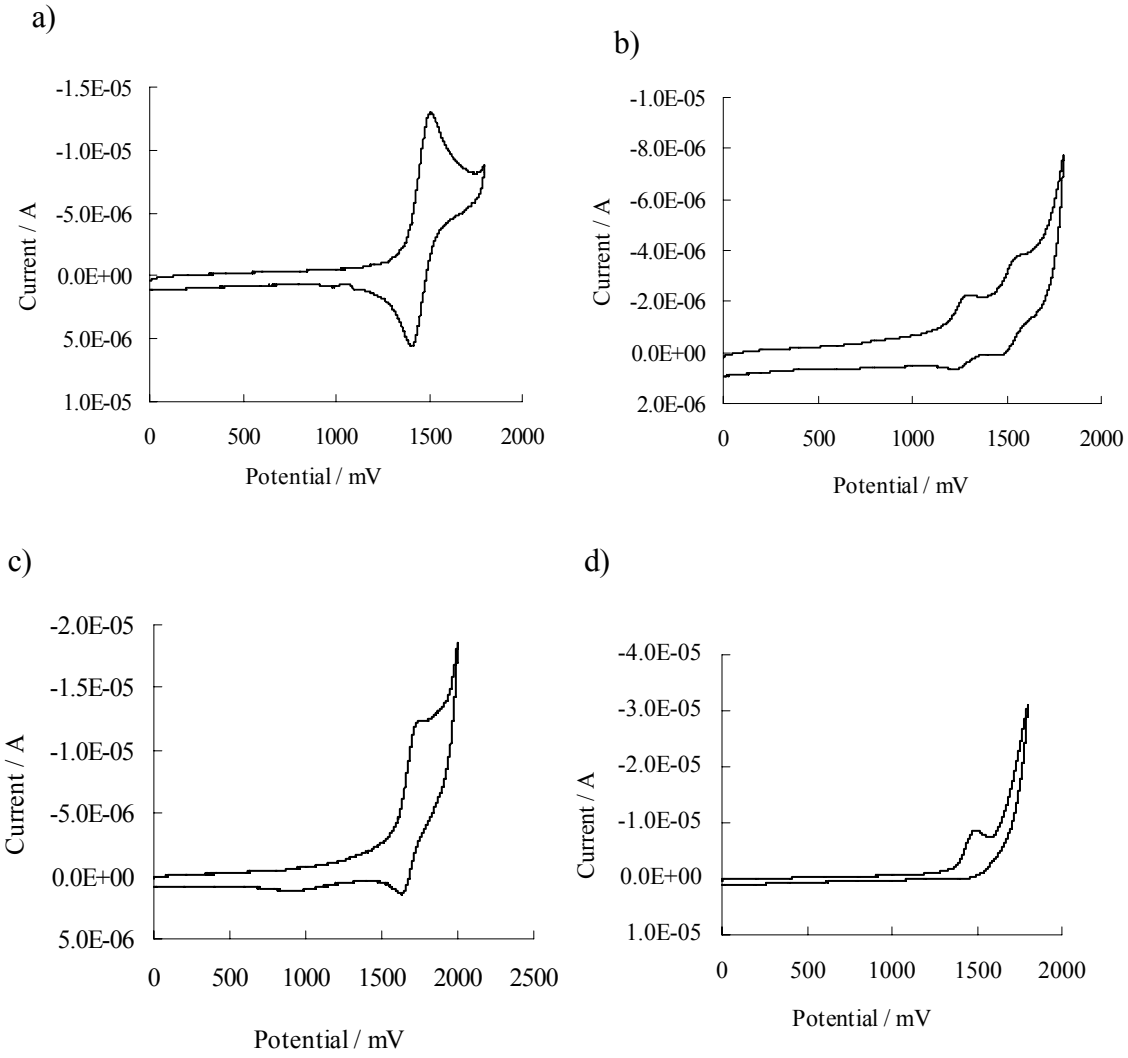


Fig. S5 Cyclic voltammograms of thiazolothiazole/phenylene co-oligomers **1** (a), **2** (b), **3** (c) and **7** (d). Conditions: 0.1 M $(n\text{-Bu})_4NPF_6$ in CH_2Cl_2; working electrode, Pt disk (1-mm diameter); counter electrode, Pt wire; reference electrode, SCE.

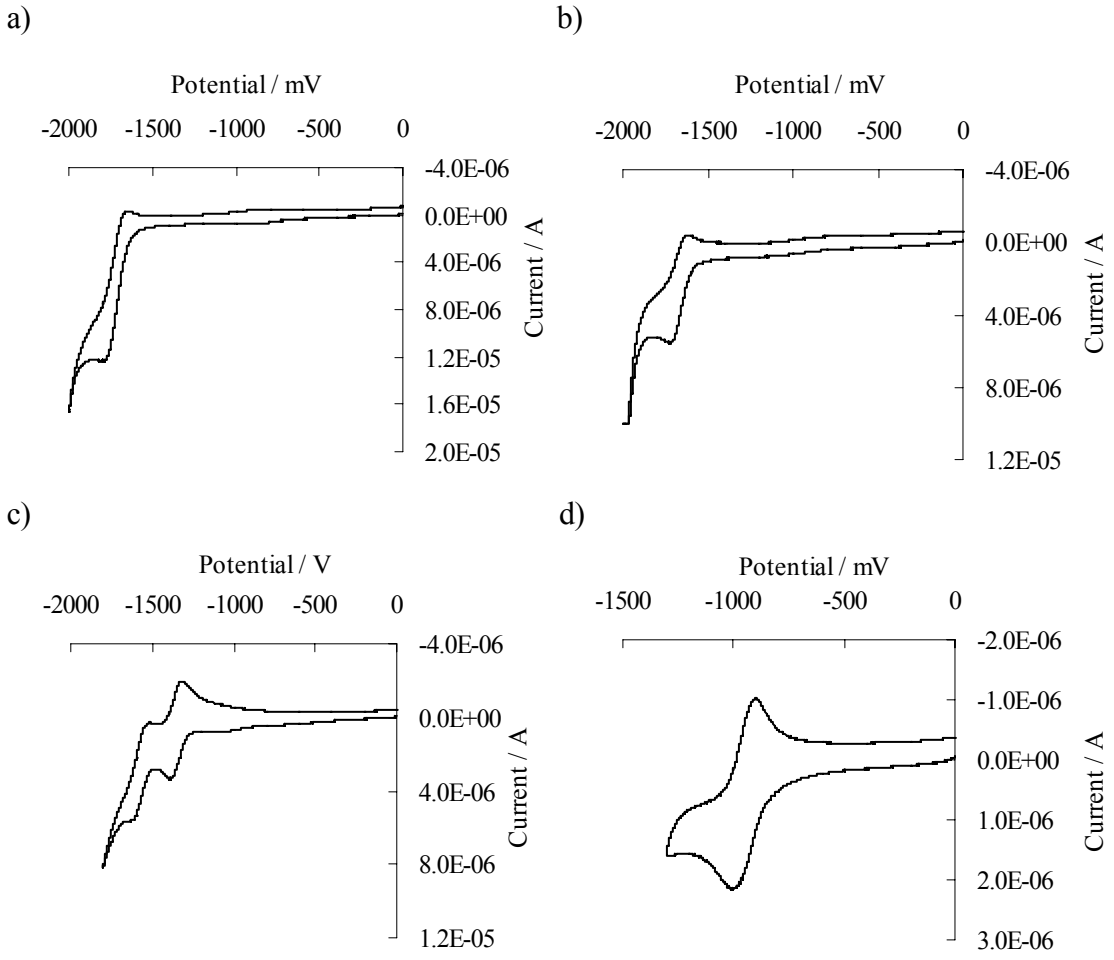


Fig. S6 Cyclic voltammograms of thiazolothiazole/phenylene co-oligomers **3** (a), **4** (b), **5** (c) and **6** (d). Conditions: 0.1 M $(n\text{-Bu})_4NPF_6$ in CH_2Cl_2; working electrode, Pt disk (1-mm diameter); counter electrode, Pt wire; reference electrode, SCE.

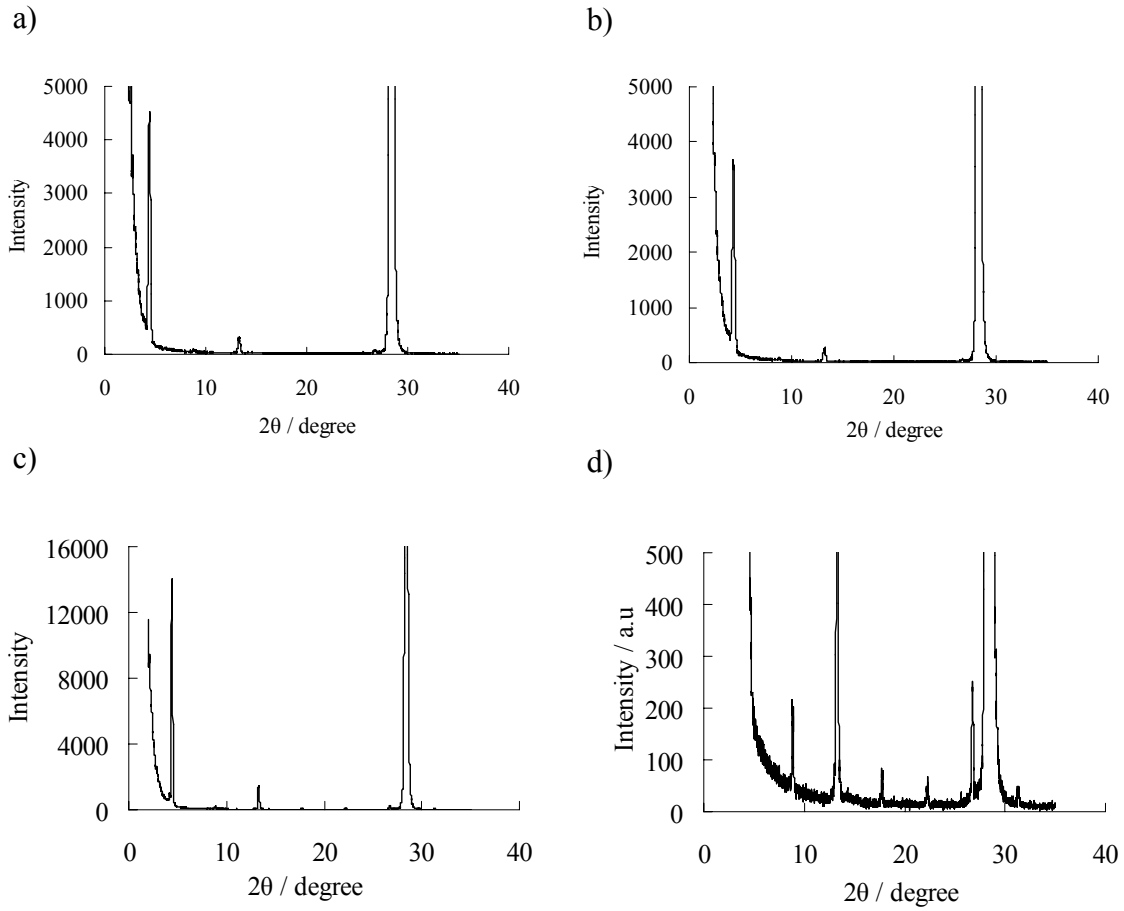


Fig. S7 X-ray diffractograms from 50 nm films of derivatives **7**; deposited at a) 20℃, b) 50℃, c) 70℃ and d) an enlarged picture at 70℃ of vertical axis.

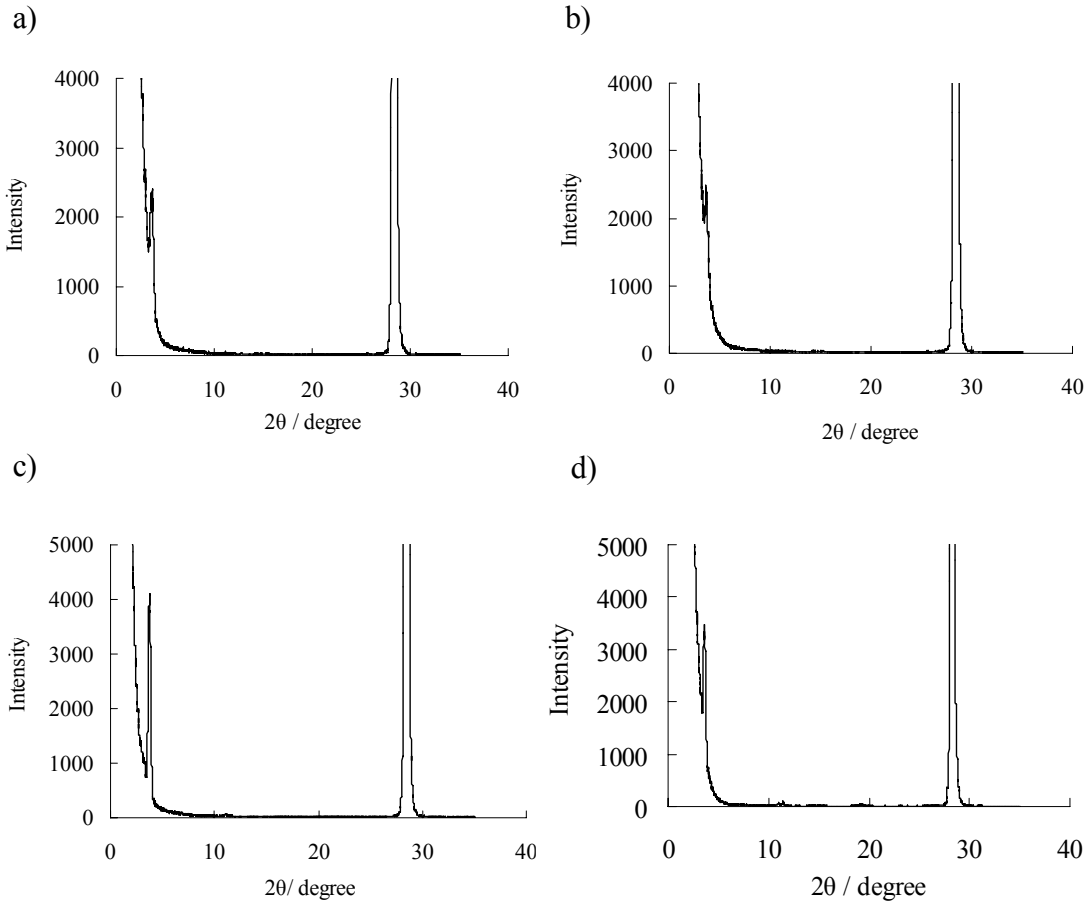
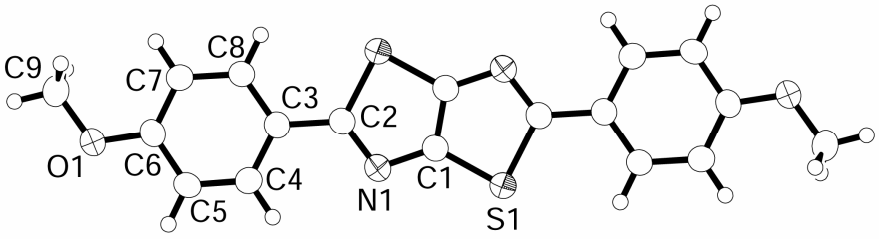
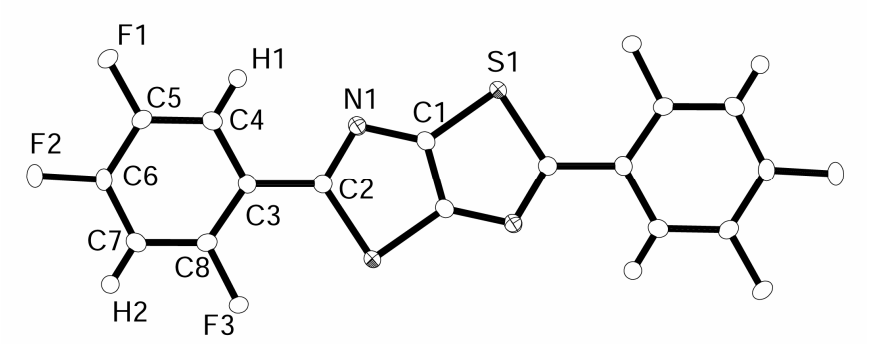


Fig. S8 X-ray diffractograms from 50 nm films of derivatives **8**; deposited at a) 20℃, b) 50℃, c) 70℃ and d) at 70℃ on HMDS.

a)



b)



c)

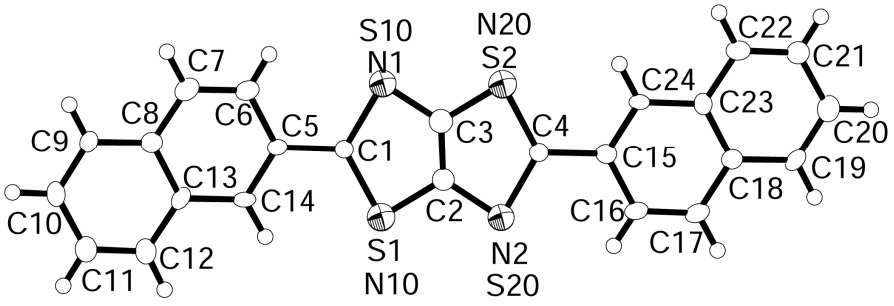


Fig. S9 Molecular structure of compound **2**(a), **4**(b) and **7**(c).