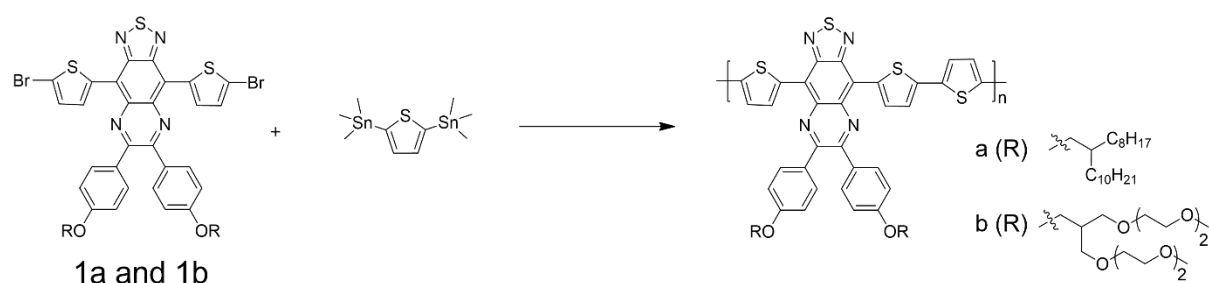


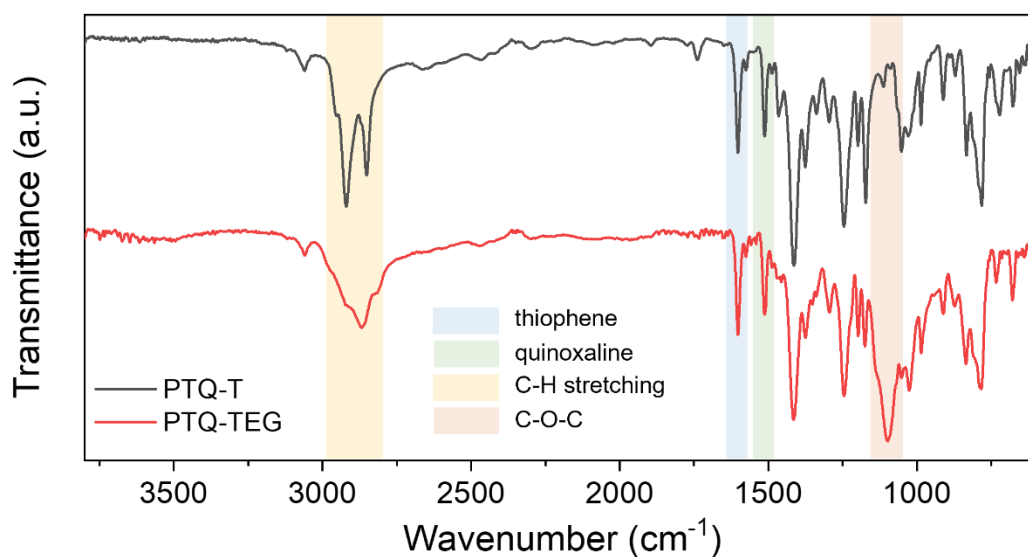
## Supporting information

### Side-Chain-Assisted Transition of Conjugated Polymers from a Semiconductor to Conductor and Comparison of their NO<sub>2</sub> Sensing Characteristics

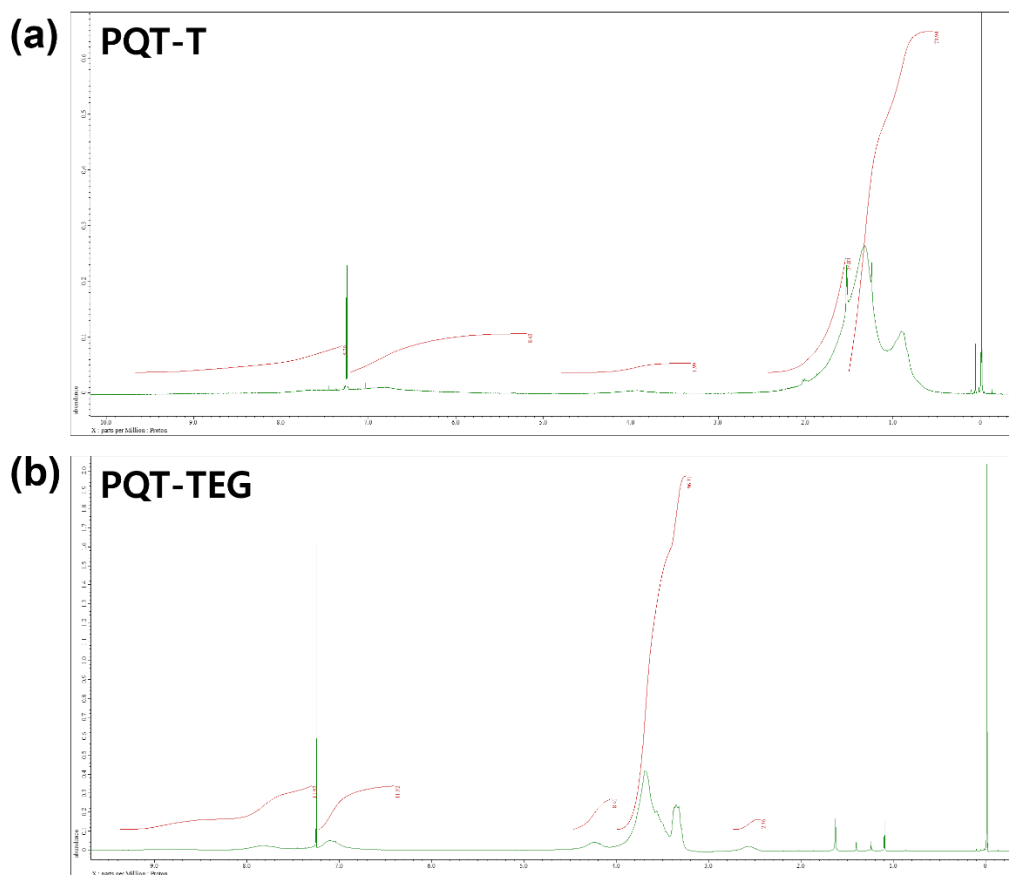
Yejin Ahn, Sooji Hwang, Hyojin Kye, Min Seon Kim, Wi Hyoung Lee, and Bong-Gi Kim \*



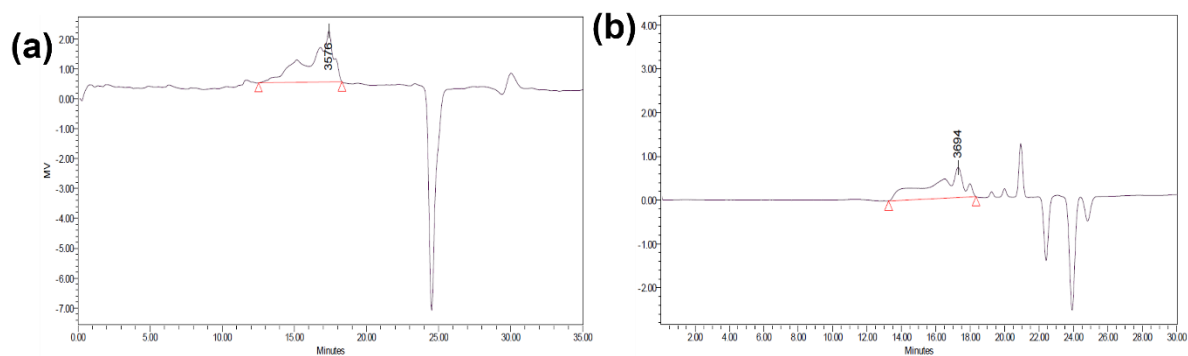
**Scheme S1.** Detailed chemical structures and polymerization scheme of CPs.



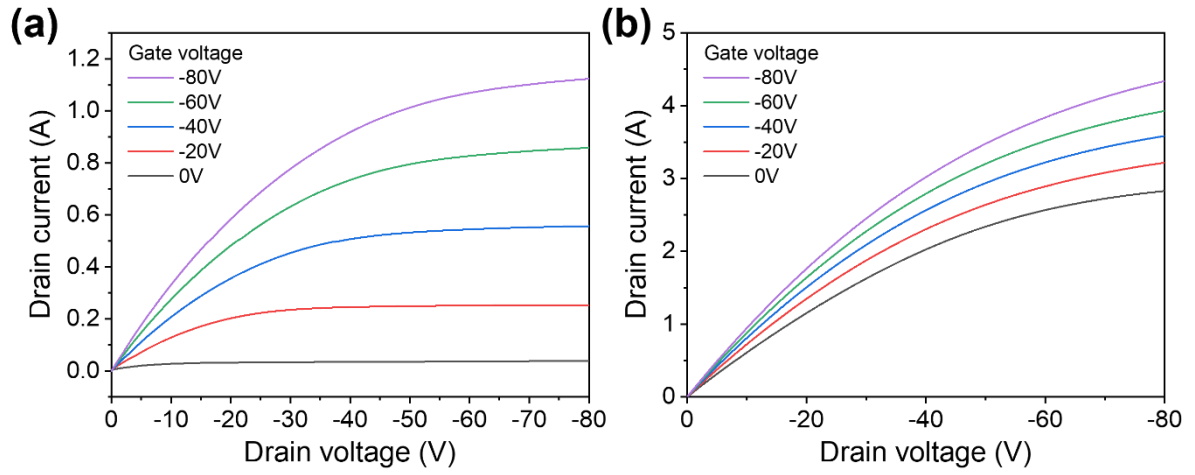
**Figure S1.** FT-IR absorption spectra (a) **PTQ-T** and (b) **PTQ-TEG**.



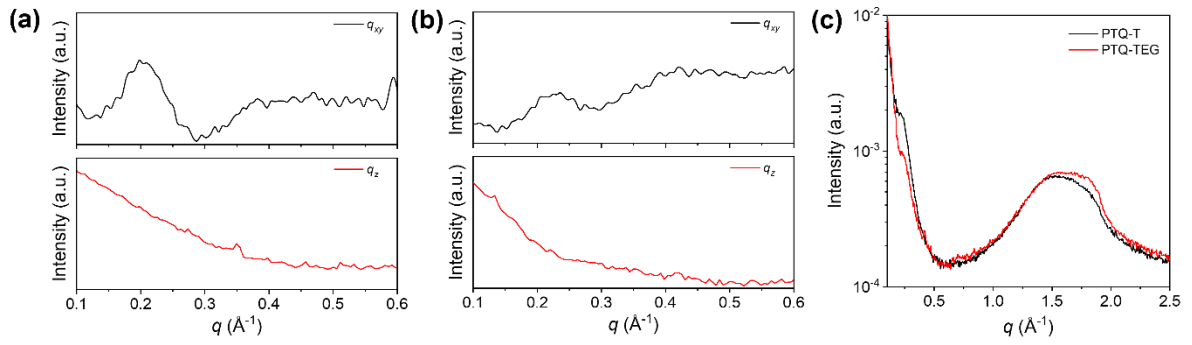
**Figure S2.**  $^1\text{H}$ -NMR spectra of (a) **PTQ-T** and (b) **PTQ-TEG**.



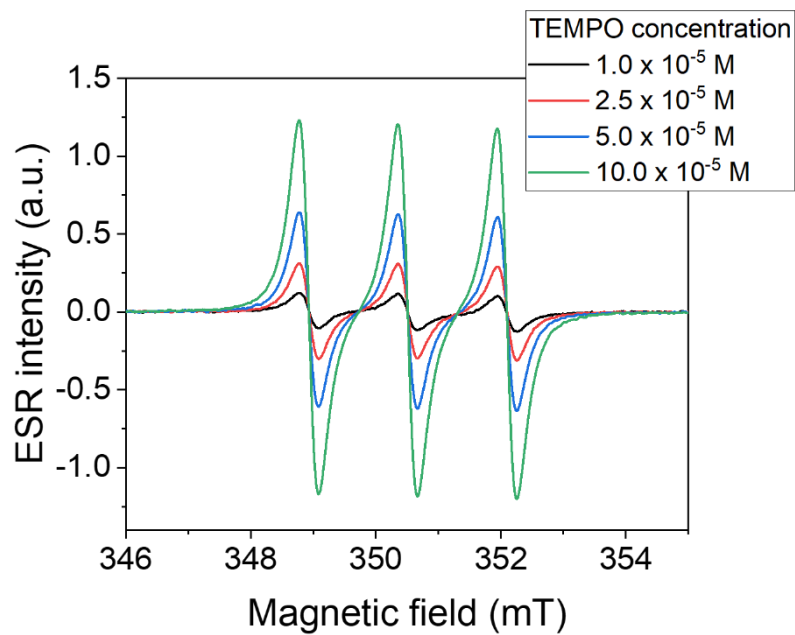
**Figure S3.** Molecular weight of (a) **PTQ-T** and (b) **PTQ-TEG**, which were determined using gel permeation chromatography with elution of chloroform.



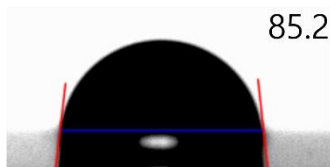



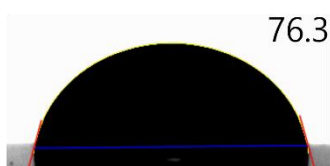
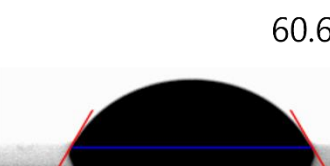
**Figure S4.** Output curve characteristics of (a) **PTQ-T** and (b) **PTQ-TEG** according to  $V_G$  in FET device.



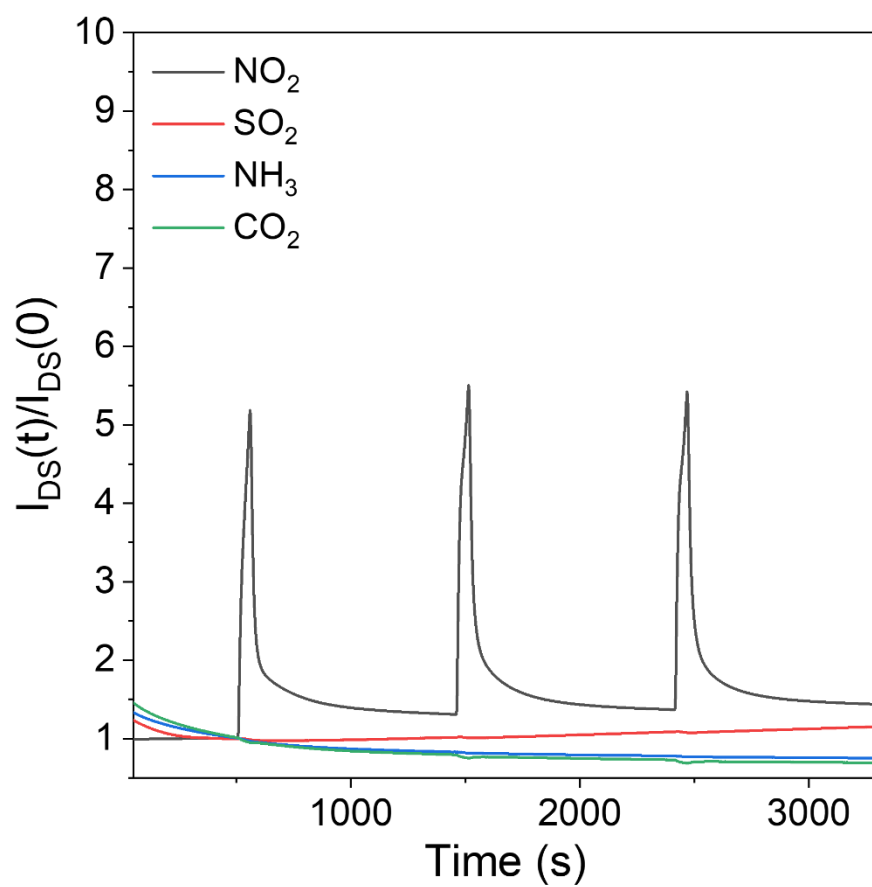
**Figure S5.** XRD diffraction patterns in the small  $q$  region of (a) **PTQ-T** and (b) **PTQ-TEG**, and (c) average XRD diffraction patterns of all direction in both CPs.



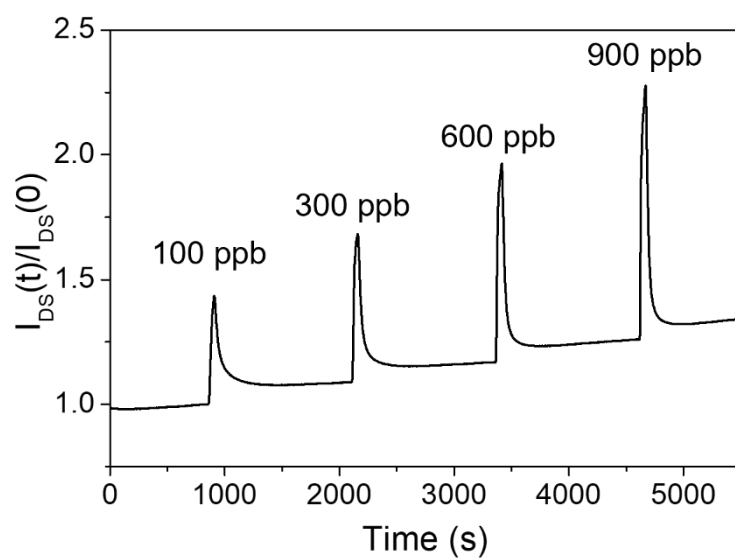
**Figure S6.** ESR intensity according to TEMPO concentration.

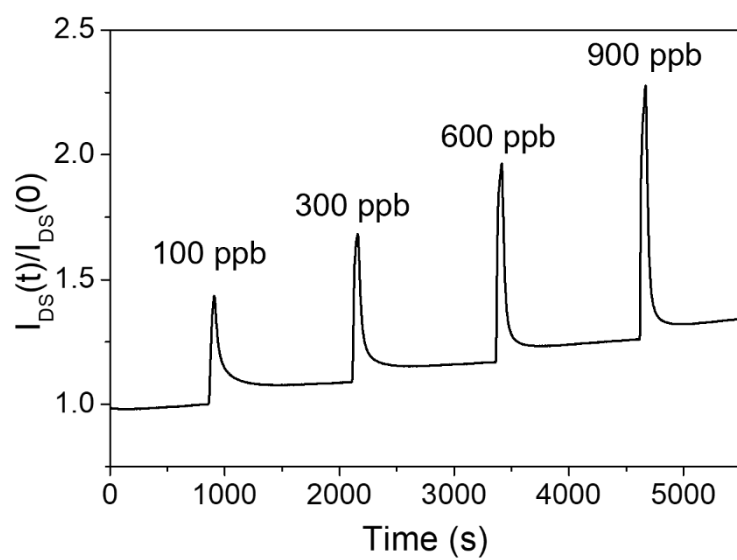
	PTQ-T	PTQ-TEG
Water	 85.21°	 68.06 °
Diiodomethane	 41.07°	 34.07°
Glycerol	 76.32°	 60.62 °

**Figure S7.** Contact angle of each solvent on the CP films.



**Figure S8.** Response pattern of **PTQ-TEG** resistive sensor to common gases.





**Figure S9.** Response pattern of **PTQ-TEG** resistive sensor according to  $\text{NO}_2$  concentration.