Supplementary Information for

A novel route for polymerisation of thiophene based conducting polymers using trace-free oxidants

*Jimy Hadiono So, David Mayevsky, Orawan Winther-Jensen and Bjorn Winther-Jensen**

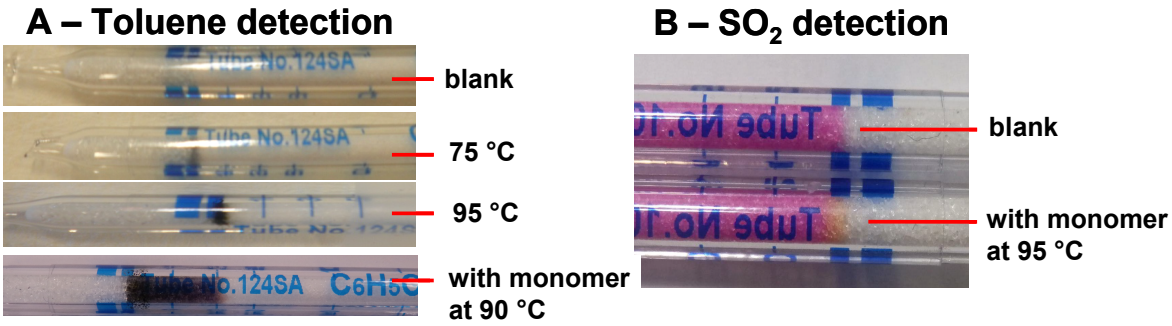


Figure S1 Kitagawa gas detectors from the chamber containing p-Toluene Sulphonic Acid (PTSa): A) for Toluene detection at 75 ºC and 95 ºC for one hour without monomer and at 90 ºC with bithiophene monomer in the chamber after one hour and B) for SO_2 detection at 95 ºC with monomer in the chamber after one hour.

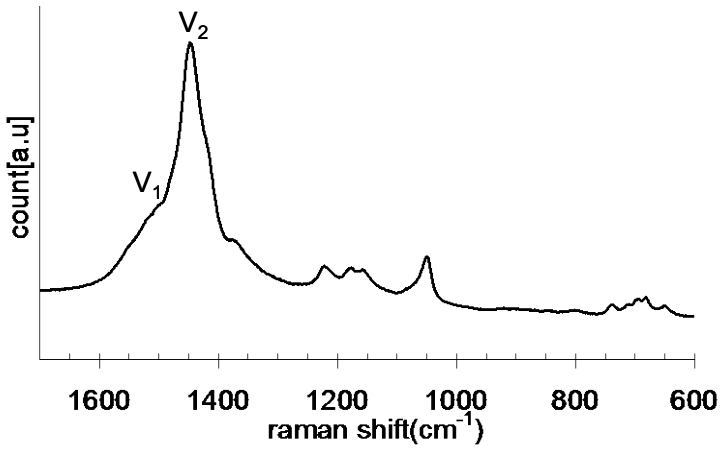


Figure S2 Raman shift of PTTh sample prepared using PTSa at 100 ºC for 6 hours

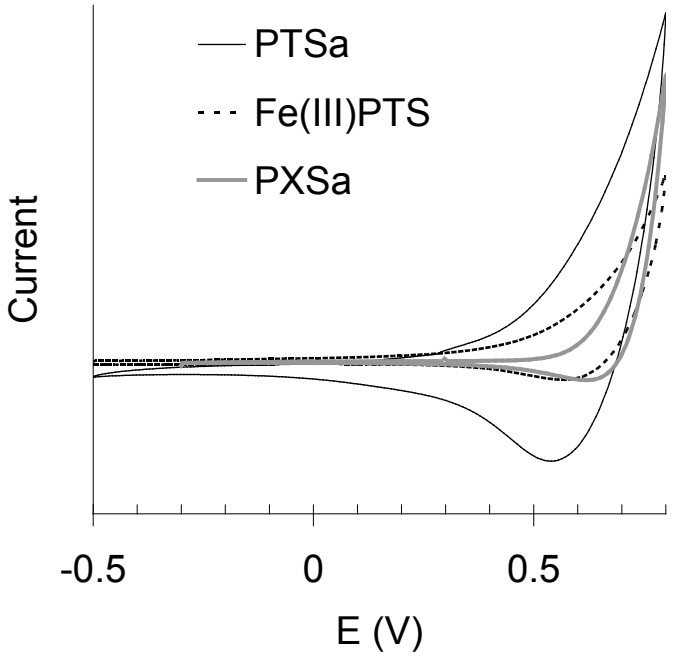
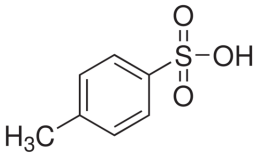
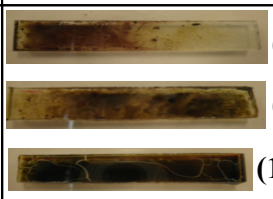
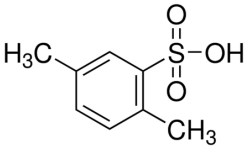
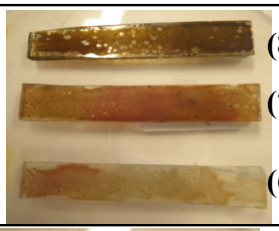
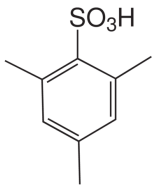
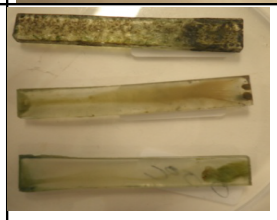
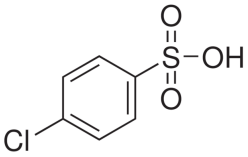
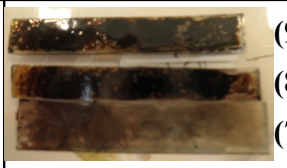


Figure S3 Cyclic voltammograms of PBTh sample prepared using PTSa at 90 ºC, Fe(III) PTS at 70 ºC and PXSa at 70 ºC, scanned in 0.1M tetrabutylammonium hexafluorophospahete in propylene carbonate in nitrogen glove box.

Table S1 PBTh films polymerised from different sulphur containing acids

Sulphur Containing Acid	Structure	Tm (ºC)	Washed films (polymerised temperature ºC)
p-toleuenesulfonic acid (PTSa)		105	 **(85)** **(90)** **(100)**
p-xylene-2-sulfonic acid (PXSa)		86	 **(80)** **(70)** **(60)**
2,4,6-trimethylbenzene-1-sulfonic acid		75	 **(70)** **(65)** **(60)**
Chlorobenzene-Sulfonic Acid		102	 **(90)** **(80)** **(70)**