APPENDIX

A. 1 ELECTROPOLYMERISATION OF COMPOUNDS 13-16

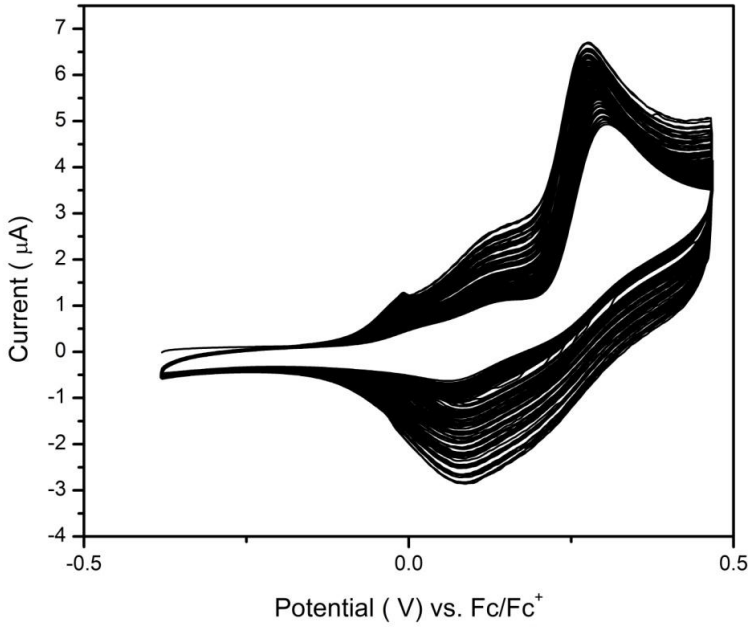

Figure A.1. Electropolymerisation of **open-EDOT** (**13**)

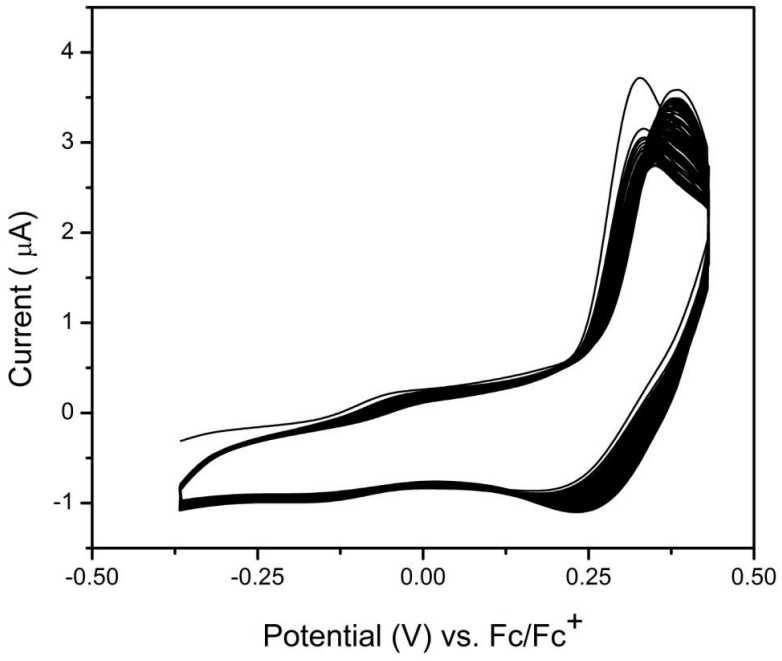

Figure A.2. Electropolymerisation of **open-EDTT** (**14**)

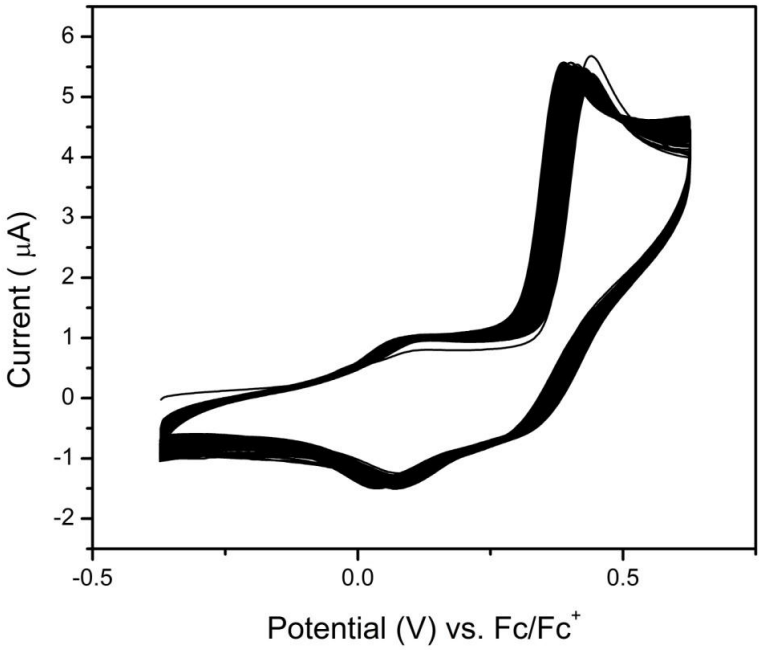

Figure A.3. Electropolymerisation of **close-EDOT** (**15**)

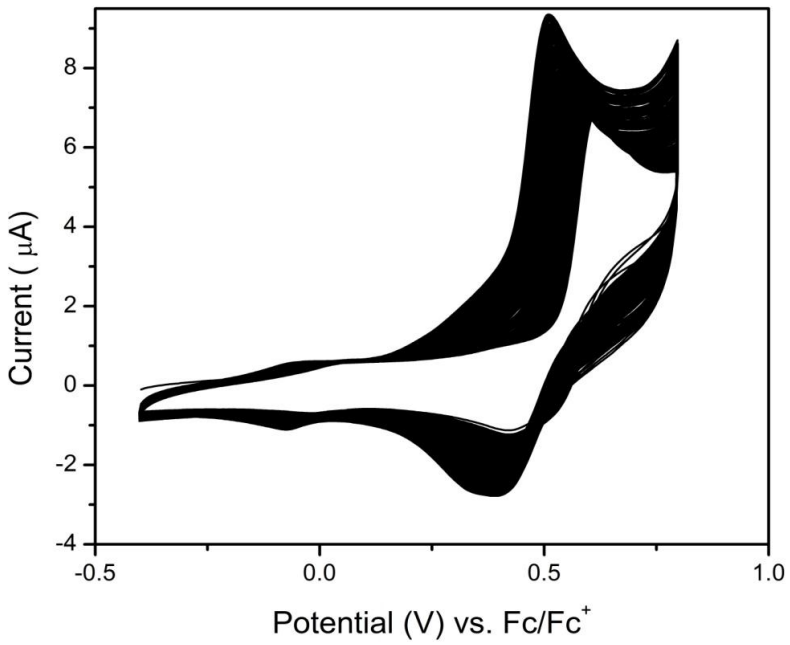

Figure A.4. Electropolymerisation of **close-EDTT** (**16**)

A. 2 UV-VISIBLE ABSORPTION SPECTRA OF CHEMICALLY GROWN P(BDP-EDTT) POLYMERS

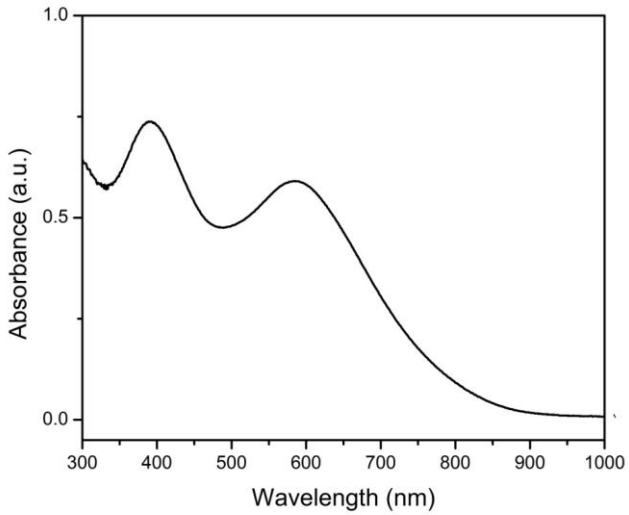

Figure A.5. UV-vis absorption spectra in solution of **p(BDP-EDTT)** synthesised *via* Sugimoto polymerisation

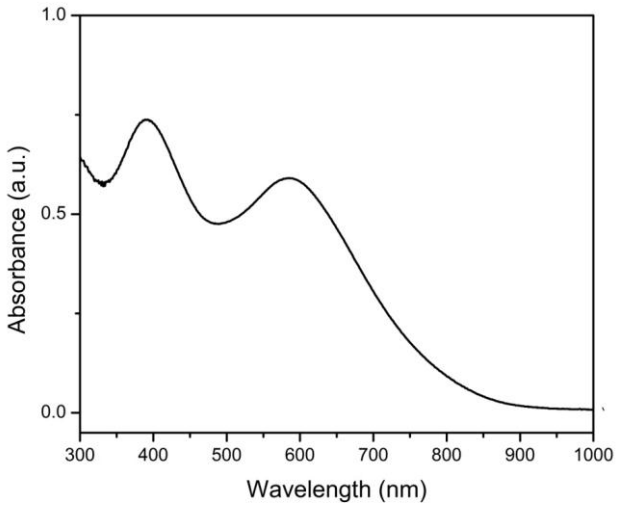

Figure A.6. UV-vis absorption spectra in solution of **p(BDP-EDTT)** synthesised using nitrosonium ion

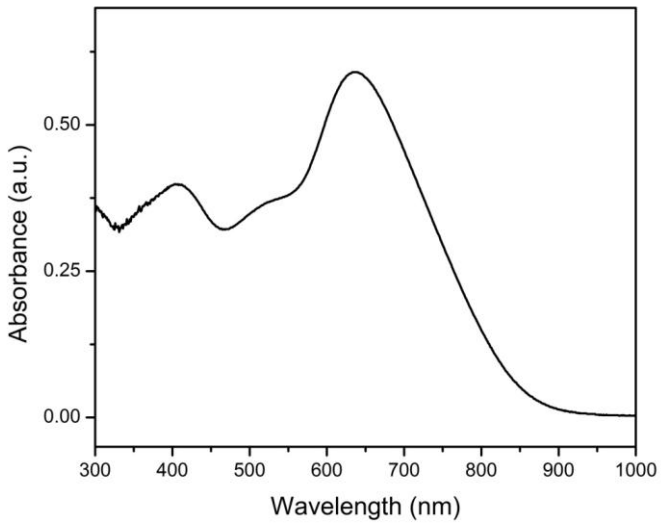

Figure A.7. UV-vis absorption spectra in solution of **p(BDP-EDTT)** synthesised *via* Yamamoto polymerisation

A. 3 TIME OF FLIGHT MEASUREMENTS OF p(BDP-EDOT)

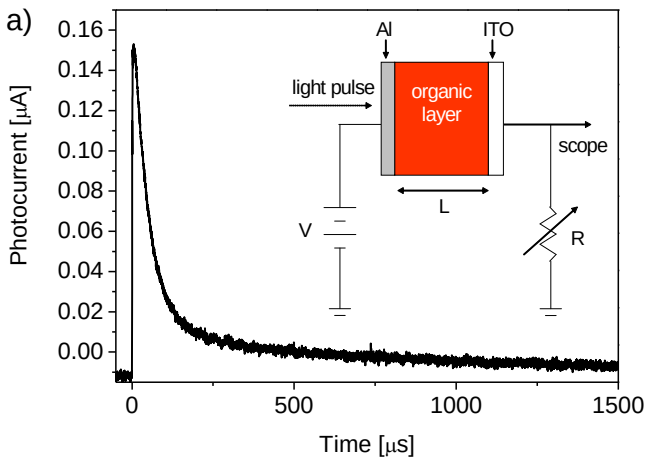

Figure A.8. Holes photocurrent transients of **p(BDP-EDOT)** at electric field of 1.8 x 10^5 Vcm^{-1} in linear scale.

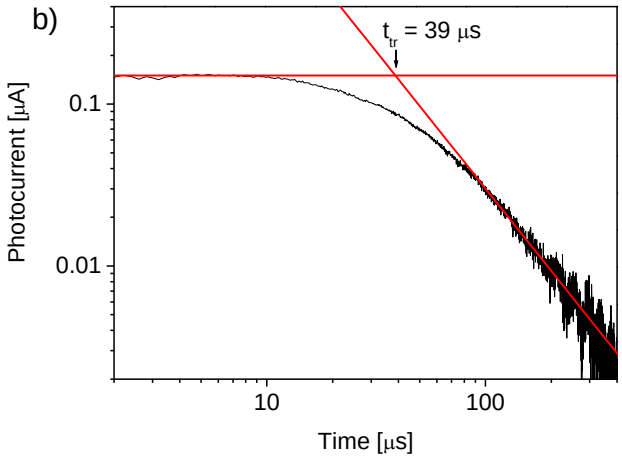

Figure A.9. Holes photocurrent transients of **p(BDP-EDOT)** at electric field of 1.8 x 10^5 Vcm^{-1} in log-log scale.

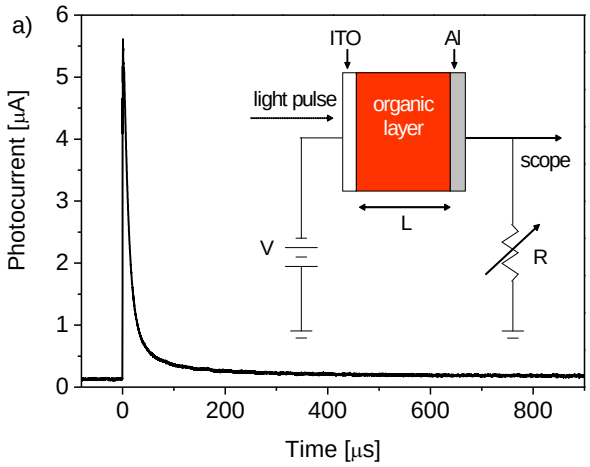

Figure A.10. Electrons photocurrent transients of **p(BDP-EDOT)** at electric field of 1.8 x 10^5 Vcm^{-1} in linear scale.

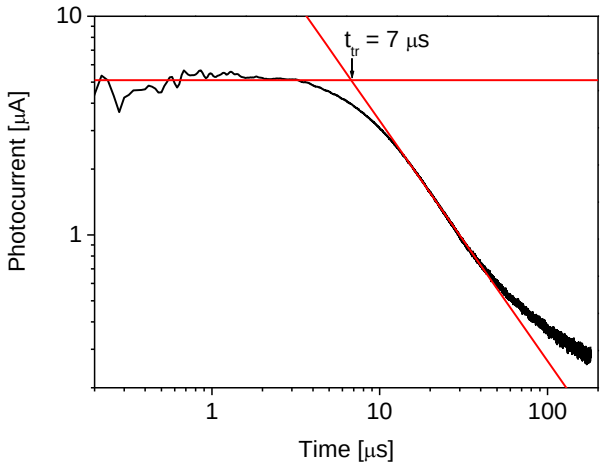

Figure A.11. Electrons photocurrent transients of **p(BDP-EDOT)** at electric field of 1.8 x 10^5 Vcm^{-1} in log-log scale.

A. 4 FABRICATION OF OFETS USING P(DPP-TTF)

OFETs were characterised by bottom gate and bottom contact source and drain method. n-Doped Si wafers were used as substrates with thermally grown SiO_2 (~200 nm). The wafers had a capacitance of 17.25 nF cm^{-2} and incorporated prefabricated interdigitated gold electrodes with a channel length of 2.5 mm and width of 1 cm. These prefabricated substrates were ultrasonically cleaned with organic solvents such as acetone, isopropyl alcohol and methanol, followed by nitrogen blow-dry and 2 minutes of oxygen plasma cleaning. Cleaned substrates were then treated with 10 mM of PFBT in ethanol for 15 minutes followed by treatment of 10 mM of OTS in toluene for 5 minutes. Thin films were deposited onto these substrates from 12 mg ml^{-1} solutions of **p(DPP-TTF)** in chloroform via spin-coating, and each was subsequently annealed at 200 °C for 20 min in an inert atmosphere glove box. Current–voltage characteristics were recorded using a Keithley 4200 semiconductor parameter analyser under ambient atmosphere. The surface morphology was investigated by tapping mode atomic force microscopy (AFM) Dimension 3100.