Supplementary Data for Higgins *et al*, Electrosynthesis and characterization of biotin–functionalized poly(terthiophene) copolymers, and their response to avidin.

E/mV	R_s/Ω	R_e/Ω	C_e/μF	R_{WI}/Ω	R_c/Ω	R_I/Ω
+ 1100	92	11	45	96	105.2	28.5
+ 1050	92	17	19	96.7	105.9	27.6
+ 1000	92	18	15	98.4	106.0	22.8
+ 950	93	19	13	98.6	108.6	29.9
+ 900	99	0	------	98.9	111.8	38.8
+ 800	99	0	------	98.7	116.1	52.3
+ 700	97	29	0.9	109	127.6	55.5
+ 600	98	54	0.07	126	151.6	75.6
+ 500	95	419	0.064	944	1281	1010

Table S1: The resistance and capacitance data extracted from the EIS data for polyterthiophene; e, c, I, and WI stand for electronic, capacitive, ionic and Warburg impedance respectively.

E/mV	R_e/Ω	$C_e/\mu F$	R_{WI}/Ω	R_c/Ω	R_I/Ω
+ 800	0	------	87	118	93
+ 700	0	------	99	221	367
+ 600	0	------	109	226	352
+ 500	0	------	238	1910	5016
+ 400	34577	0.018	8028	38300	90816
+ 300	6.4×10^5	1.6×10^3	21910	-------	-------

Table S2: The resistance and capacitance data extracted from the EIS data for poly–terthiophene:**3** copolymer, e, c, I, and WI stand for electronic, capacitive, ionic and Warburg impedance respectively.

E/mV	R_s/Ω	R_e/Ω	$C_e/\mu F$	R_{WI}/Ω	R_c/Ω	R_I/Ω
+ 1050	170	1050	0.203	896	909	38
+ 1000	190	1240	0.175	977	1079	305
+ 950	200	2570	0.068	1618	1815	591
+ 900	340	3040	0.012	2163	2478	945

Table S3: The resistance and capacitance data extracted from the EIS data for poly(**I**-co-III), e, c, I, and WI stand for electronic, capacitive, ionic and Warburg impedance respectively.

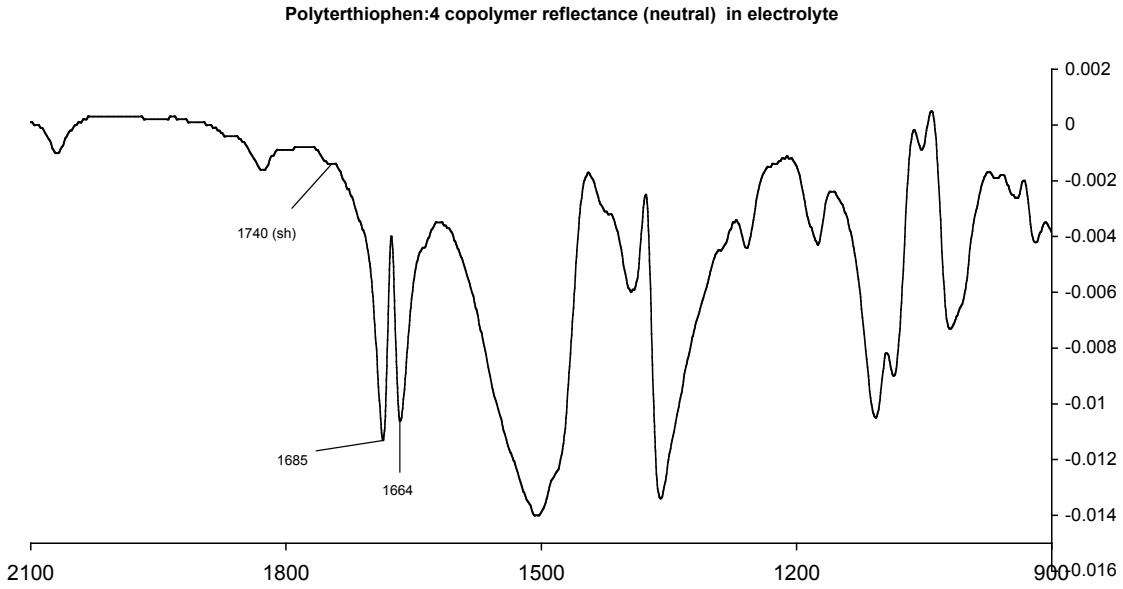

Figure S1. FTIR spectrum, recorded *in situ*, of poly–2,2':5',2''–terthiophene:**4** copolymer (neutral form), in 0.2 M TEAT/CH_3CN immediately after film growth.

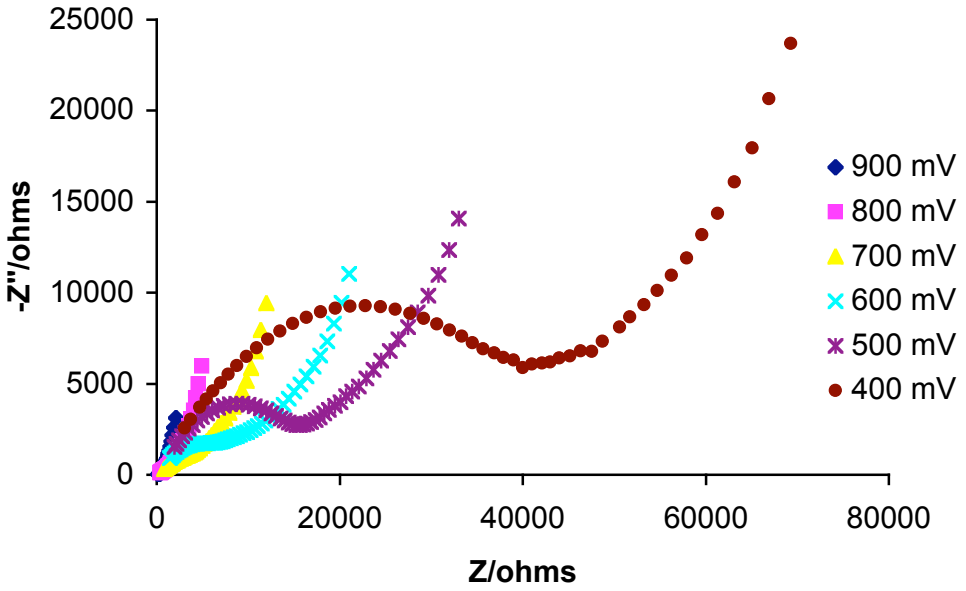

Figure S2. EIS data for poly–2,2':5',2''–terthiophene:**4** copolymer over full frequency range, prior to exposure to avidin.

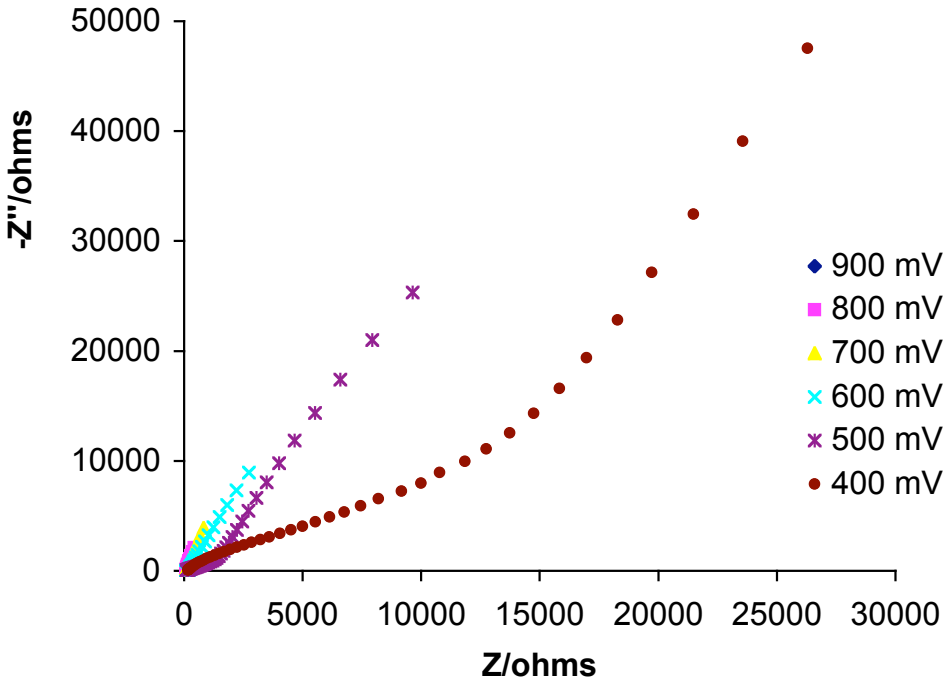

Figure S3. EIS data for poly–2,2':5',2''–terthiophene:**3** copolymer over full frequency range, prior to avidin exposure

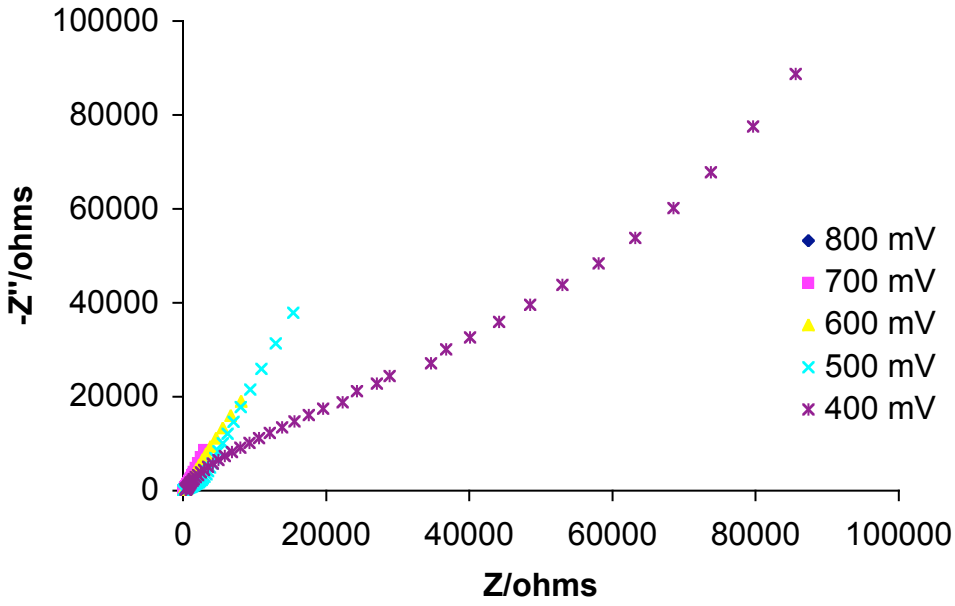

Figure S4. EIS data for poly–2,2':5',2''–terthiophene:**3** copolymer over full frequency range, after avidin exposure.