Supporting Information

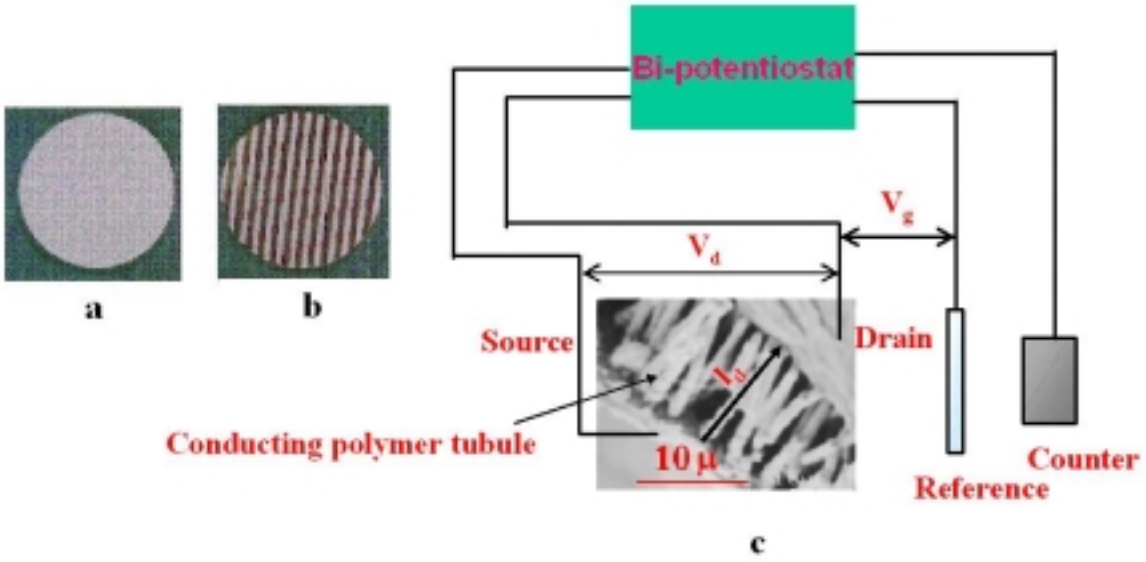

Figure 1: (a) Isoporous polycarbonate membrane, (b) Both side gold coated polycarbonate membrane and (c) Schematic representation of the sensor measurements.

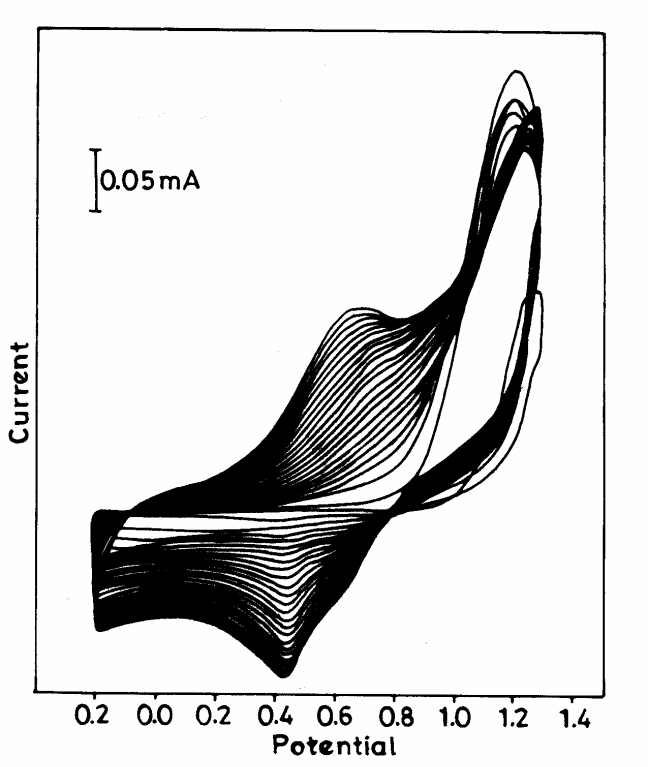

Figure 2. Growth of PEDOT/ss DNA(A) from 0.01M EDOT and 0.1M KCl in pH 8.0 phosphate buffer at a scan rate of 50mV/s.

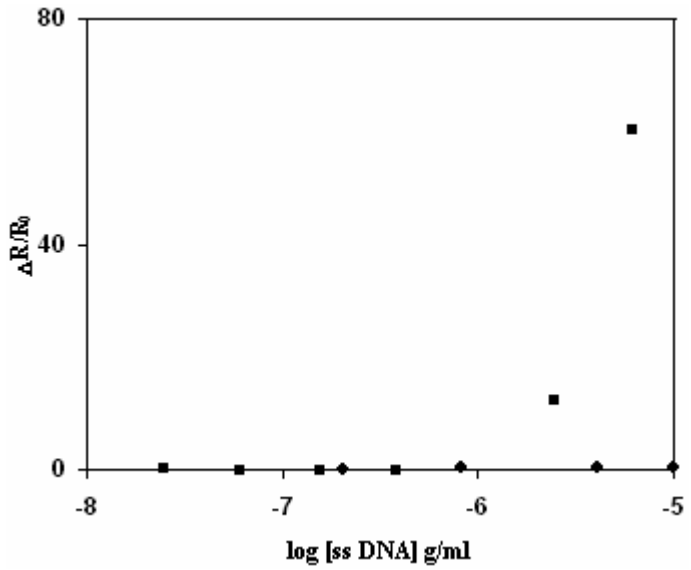

Figure 3. Sensor response using 5mer ssDNA (C1) immobilized PEDOT. ■ sensor response when exposed to a 10mer (B1) with 5mer complementary segment and ●is for a 10mer (B) having 2mer complementary segment.

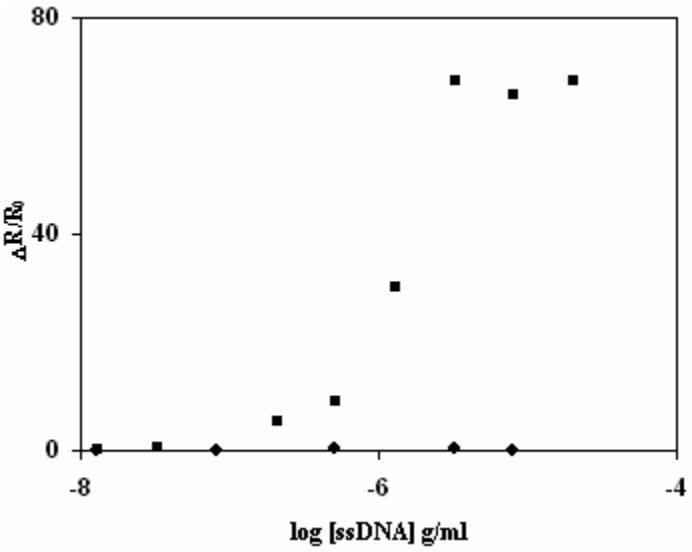

Figure 4. Sensor response using 10mer ssDNA(B) immobilized PEDOT; ■sensor response when exposed to various concentrations of 5mer (C); ●is for control experiment where the sensing device had no probe ssDNA.

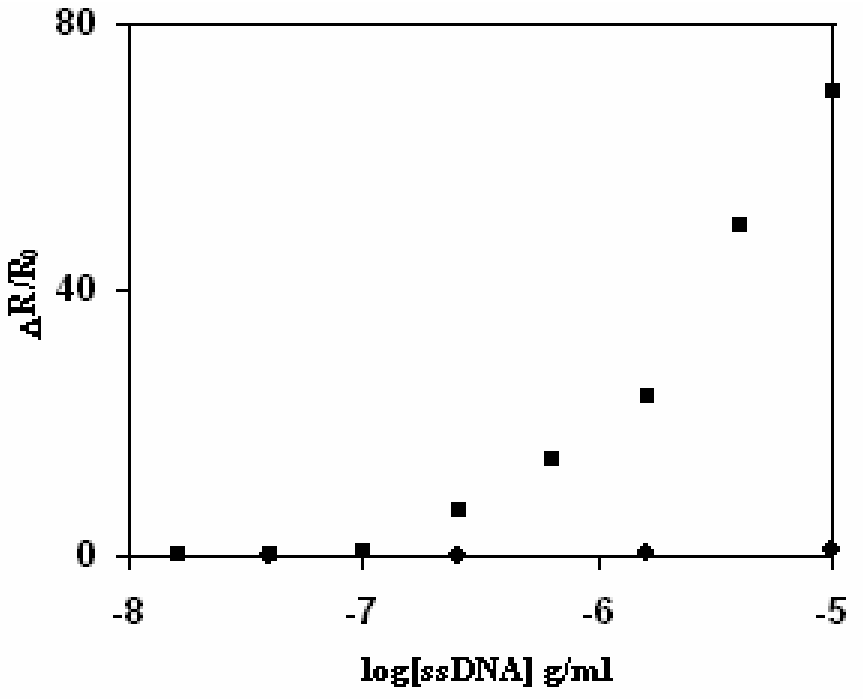

Figure 5. Sensor response using 10mer ssDNA(B) immobilized PEDOT; ■ Sensor response as a function of ssDNA concentration (B1); ● for noncomplementary strand (A).

In order to confirm the increase in resistance of the film, cyclicvoltammogram was recorded for the ssDNA immobilized PEDOT before and after exposure to complementary ssDNA. The redox charge of the polymer in pH 8 phosphate buffer before exposure to complementary ssDNA was 1.25mC, which decreases to 0.06 mC upon exposure to complementary ssDNA (Figure 6). In a control experiment, the redox charge of the PEDOT (without any probe DNA) remains same after exposure to a ssDNA solution indicating that the increase in resistance is due to the formation of duplex (Figure 7).

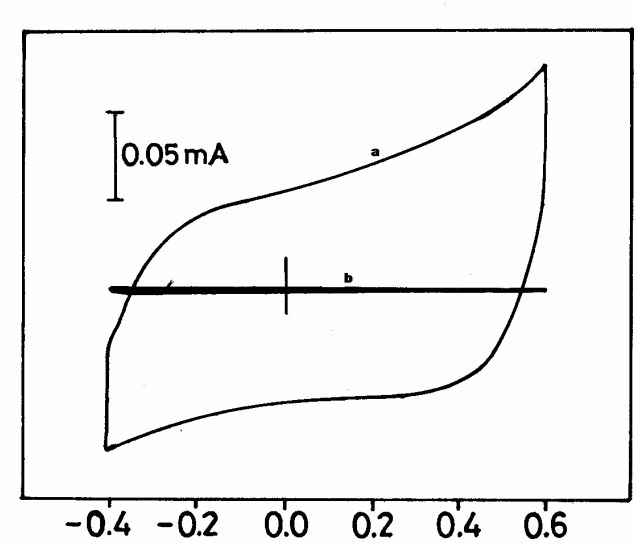

Figure 6. CV of PEDOT/ssDNA in pH 8.0 phosphate buffer at a scan rate of 100 mV/s; a) before exposure to the target ssDNA and b) after exposure to target ssDNA.

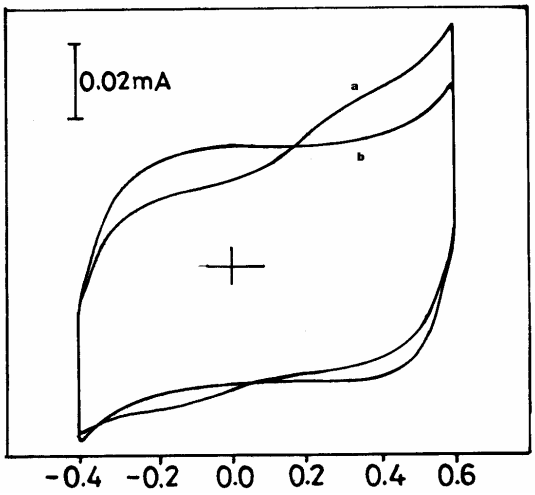

Figure 7. CV of PEDOT (without probe ssDNA) in pH 8.0 phosphate buffer at a scan rate of 100 mV/s; a) before exposure to the ssDNA and b) after exposure to ssDNA.