This section includes data showing the increase in drain current upon repetitive measurements with the same voltage measurement conditions.

Figure 1 (a), (c) and (d) show the output characteristics of a transistor with successive sweeps (repeated measurements) with the same voltage conditions. The drain-source voltage, $V_{ds}$, is swept from 0 V to -1.5 V, in steps of 0.1 V with pulse period and width of 0.5 s and 20 ms respectively. Gate voltages, $V_g$ are varied from -3.0 V to -3.4 V in steps of 0.1 V.

We observe a significant increase in the drain current, $I_d$, upon repeated measurements with the same voltage condition. For example, at $V_{ds} = 1.5 V$ and $V_g = -3.4 V$, in the first sweep, $I_d$ is about 3 mA. In the second sweep with the same voltages, $I_d$ reaches up to 8 mA. In the third sweep (Figure 1 (d)) the drain current is more than 10 mA. Furthermore, we can clearly see the change in the shape of the output characteristics. The variation of the drain current with $V_{ds}$ turns gradually from a typical transistor characteristics to an Ohmic behavior without current saturation. This is another manifestation of the increasing conductivity of the polymer due to the ion penetration into the bulk and p-type doping.

Moreover, in Figure 1(b) we show the contact resistance feature which appears for the first applied gate voltage in the forward sweep, but disappears in the reverse sweep as well as in sweeps at higher gate voltage. This is believed to be due to drift of the negative ions towards the hole injecting source electrode under the source-drain electric field leading to an enhancement of the hole injection into the channel.