Supplementary Information:

Printable Ion Gel Gate Dielectrics for Low Voltage Polymer Thin Film Transistors on Plastic

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Figure 1S. (a) Aerosol printed P3HT-based GEL-OTFT schematic in cross-section and optical image of the GEL-OTFT array fabricated on a flexible polyimide substrate. The devices have channel lengths of 20 $\mu$m and channel widths of 1400 $\mu$m. (b) The transient response of aerosol printed GEL-OTFTs. The plot shows the output voltage response at $V_D = -1$ V when $V_G$ is pulsed between 0 and -2 V at 10 kHz. The insets show the measurement set up and the $I_D$-$V_G$ characteristic. In the $I_D$-$V_G$ curve, the gate voltage was swept at a rate of 50 mV/s.

Figure 1S(b) demonstrates that stand-alone GEL-OTFTs on plastic can switch at frequencies up to 10 kHz. A 10 kHz square-wave input signal was applied to the gate; the blue trace shows the output voltage clearly tracks the input. The response time of the device is approximately 0.1 ms when switching from ON to OFF or vice versa.
Figure 2S. Transfer characteristics of five printed GEL-OTFTs measured in air immediately after aerosol jet printing and after storing for one month in ambient conditions.

Aerosol jet printed devices were exposed to air for 1 month, and transfer characteristics were measured (Figure 2S). After 1 month, the maximum ON current level slightly decreased, and the OFF current slightly increased. However, there was no significant degradation.