Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C

Supplementary data: **Towards inkjet-printed low cost passive UHF RFID skin mounted tattoo paper tags based on silver nanoparticle inks**

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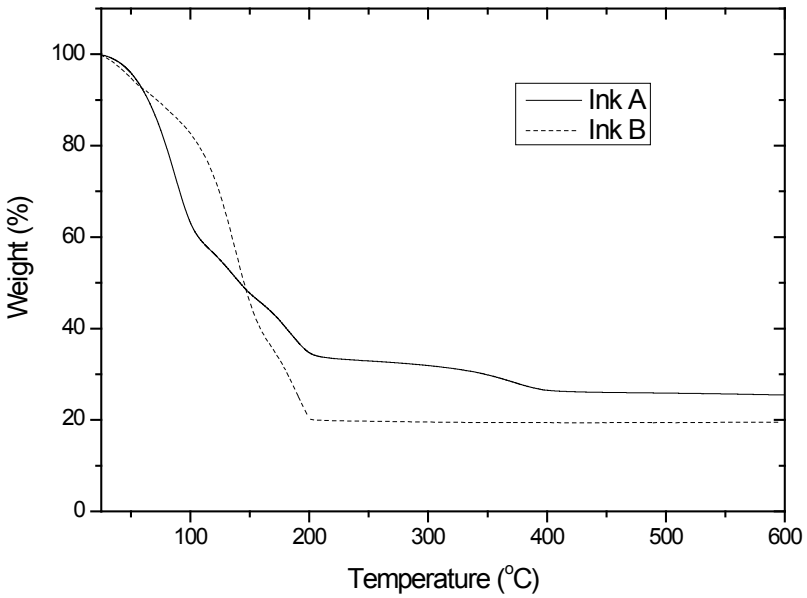
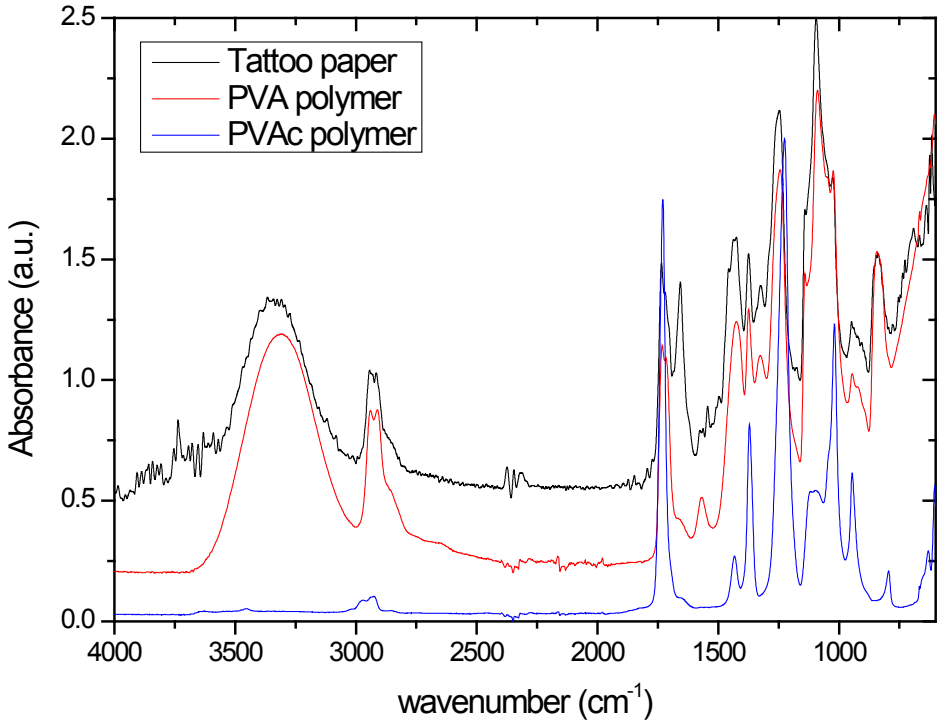


Supporting Information Figure 1. TGA of Ink A (Novacentrix Metalon JS-B25HV) and Ink B (SunTronic U5603 from Sun Chemicals supplied by Sigma Aldrich).

Grazing angle FT-IR characterisation of tattoo paper was performed on a Bruker Vertex-70 spectrometer equipped with a Harrick Seagull accessory and Germanium hemisphere ATR crystal and nitrogen purge. The sample was mounted with a torque of 7.4 in. lb. and incident angle of 65º. Both background and measurements were averaged over 64 scans with a resolution of 4 cm-1, recorded by a DLaTGS detector. Poly(vinyl alcohol) (PVA, 10-23 Sigma Aldrich, UK) and Poly(vinyl Acetate) (PVAc, xxx Sigma Aldrich, UK) were characterised under the same experimental conditions, except the samples were mounted as solids on a Pike Miracle accessory. GA-FT-IR is the preferred method for characterising polymer films on substrates, since the penetration depth of the evanescent wave is approximately 300 nm, less than the thickness of the polymer film itself (approximately 15 um according to SEM (see main text Figure 4b), hence the rest of the substrate (based paper, back coat) does not contribute to the recorded IR spectrum. As shown in Figure 2 (Supporting information), there is a significant overlap between the FT-IR spectrum of the ink receiving layer of tattoo paper and PVA polymer which suggests PVA could be the primary component of the ink receiving layer. Hence supporting the hypothesis that the ink receiving layer is made of a low T*g* polymer.



Supporting Information Figure 2. FT-IR of the ink receiving layer of transfer tattoo paper (black line), Poly(vinyl alcohol) (PVA) polymer (red line) and Poly(vinyl Acetate) (PVAc) polymer (blue line).

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