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

Perforated PVP Encapsulated AgNWs for High Mass Loading in Silver Nanowire Inks for Printed RFID Integrated Wearable Smart Bands

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Supporting Information

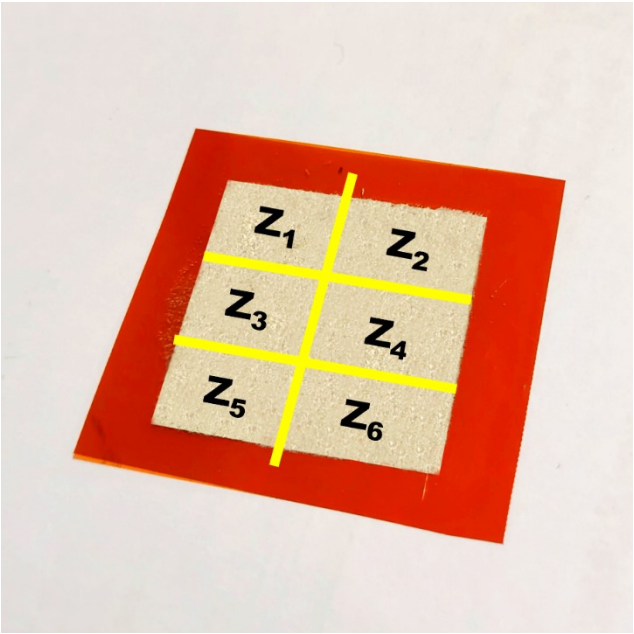

Figure S1 *Photographs depicting the zone-wise evaluation of printed traces*

Table S1 *Zone wise evaluation of sheet resistance of structures printed using ink with 36 wt% PVP@AgNW-W2, and dried at 120 ºC.*

Zone	Average sheet resistance (mΩ/□)
Z1	168.52 ± 0.70
Z2	170.97 ± 0.43
Z3	169.84 ± 0.35
Z4	169.55 ± 0.27
Z5	168.83 ± 0.05
Z6	170.67 ± 0.05

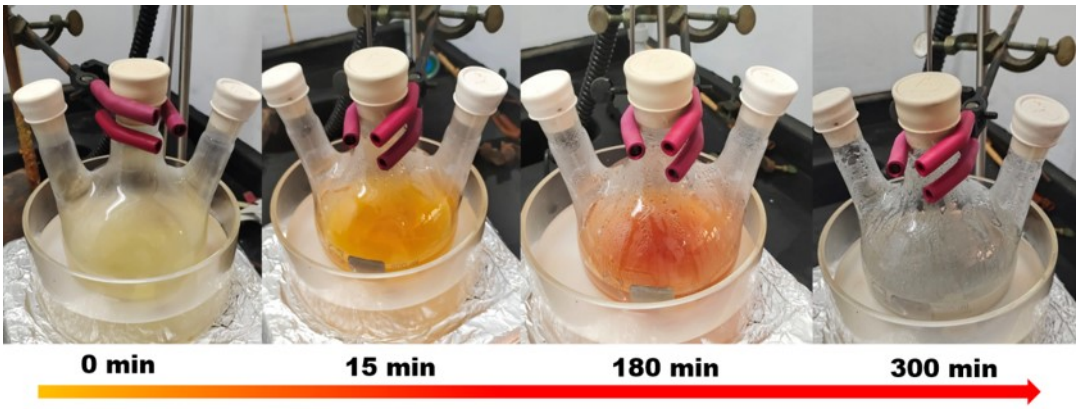

Figure S2 *Photographs of the reaction mixture during various reaction intervals, indicating the color changes.*

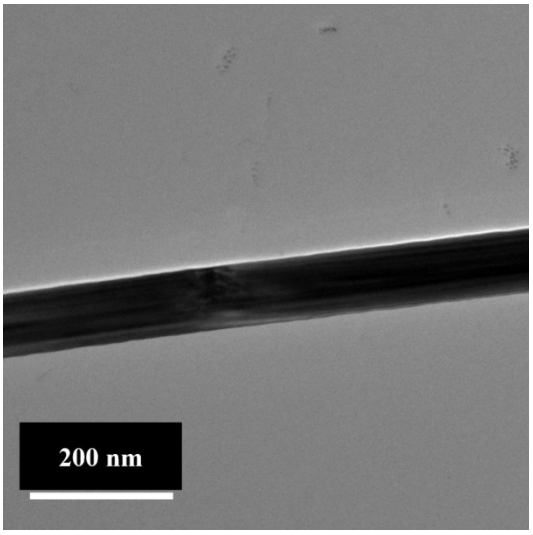

Figure S3 *Transmission electron micrograph of AgNWs washed without adding acetone.*

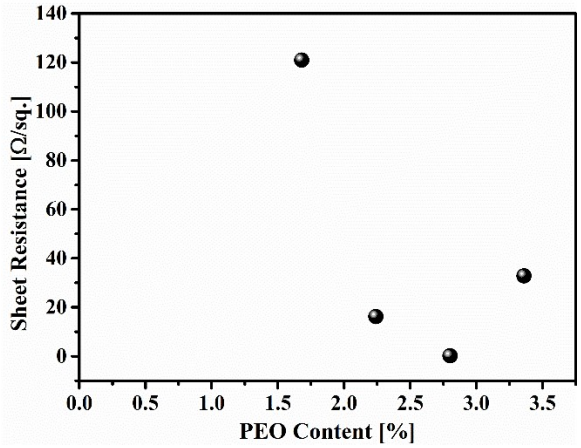

Figure S4 *Effect of PEO concentration on sheet resistance of printed structures.*

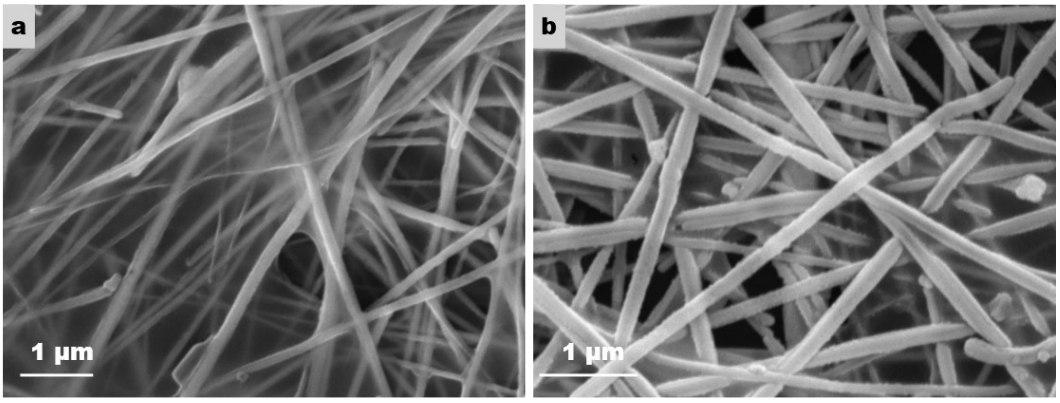

Figure S5 *Scanning electron micrographs of the printed samples when dried at (a) 80 °C for thirty minutes and (b) 120 °C for thirty minutes.*

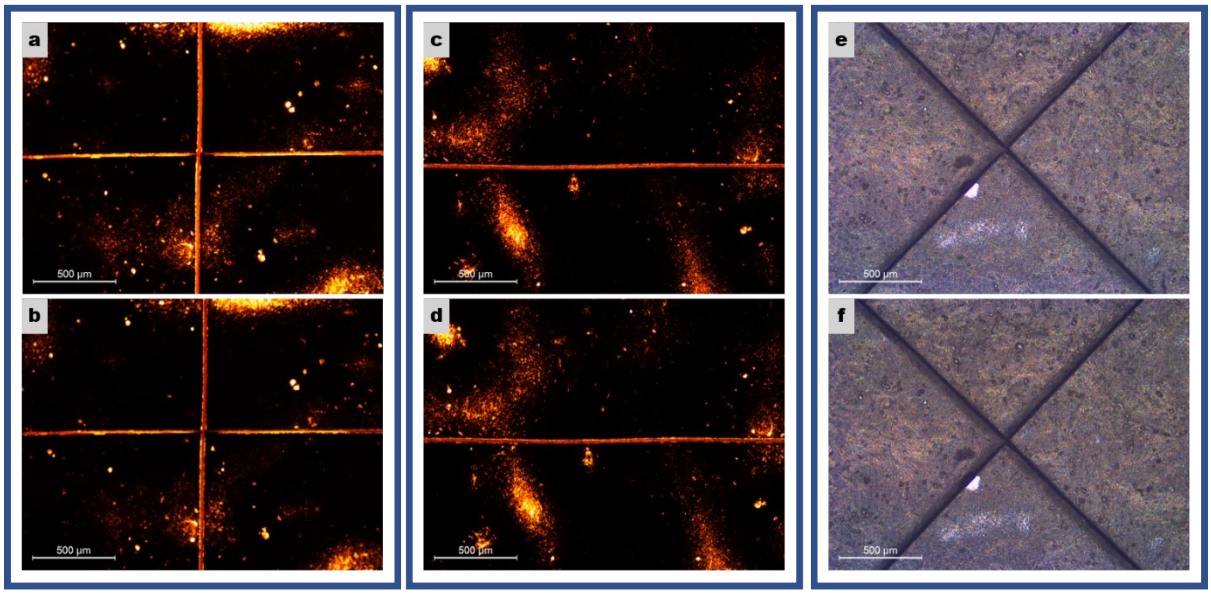

Figure S6 *Adhesion test of PVP@AgNW ink printed on Kapton®, dried at 120 °C for thirty minutes. (a), (c), and (e) Optical micrographs of the printed surface before peel off. (b), (d), and (f) Optical micrographs of the printed surface after peel off.*

Table S2 *Composition of artificial sweat sample*

Compound	Concentration
NaCl	20 g/L
NH_4Cl	17.5 g/L
Acetic acid	5 g/L
DL- Lactic acid	15 g/L
Ascorbic acid	10 mM
Uric acid	59 mM
Pyruvic acid	0.18 mM
Glucose	60 mM

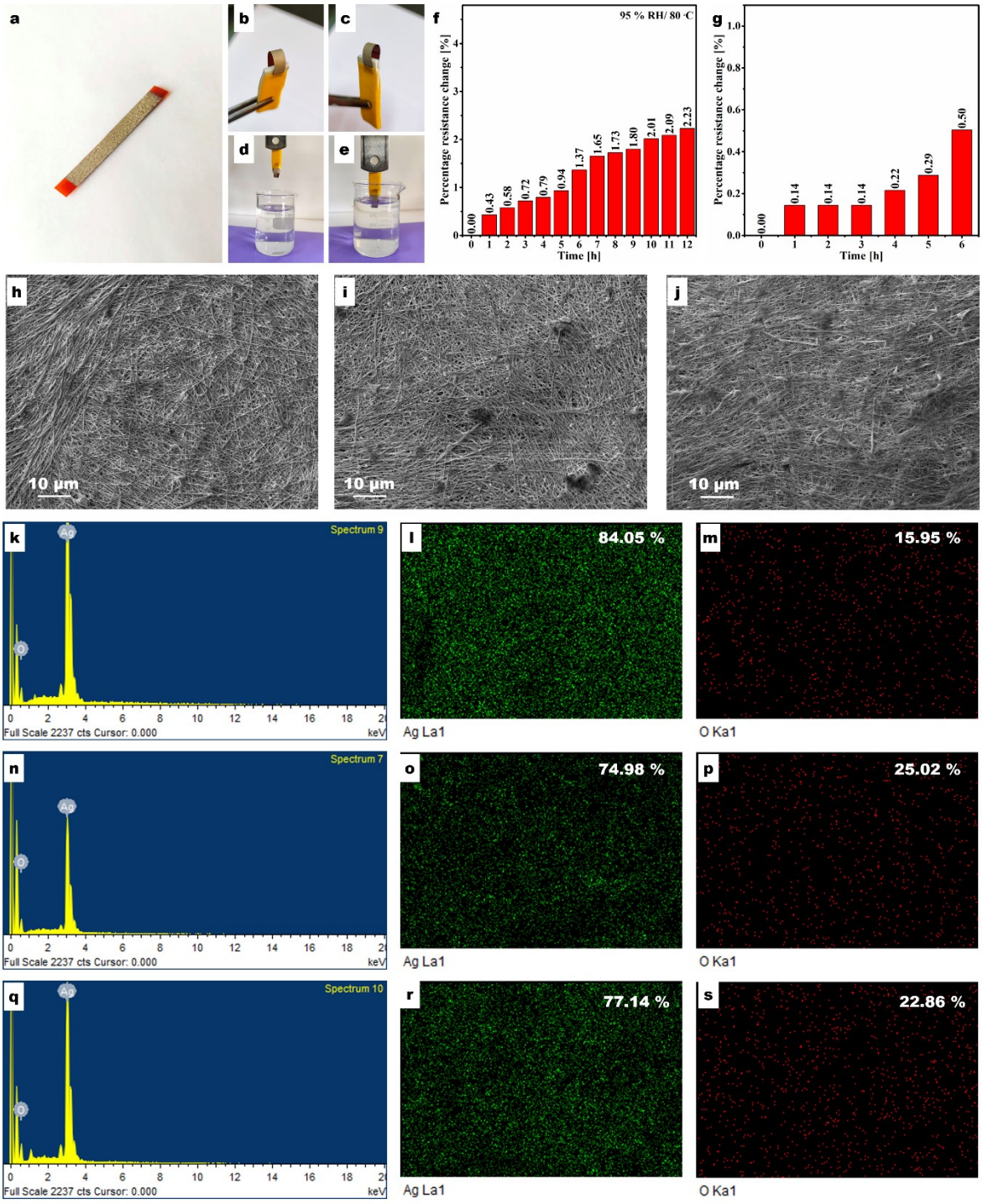

Figure S7. *Reliability analysis of the printed samples. Photographs of (a) test strip used, (b), (c) U-bend created for sweat test, (d), (e) U-bend dipped in artificial sweat. Variation in normalised resistance change in (f) accelerated areing test, (g) sweat dip test. Scanning electron micrographs of test strips (h) befor test, (i) after AAT, (j) after sweat dip test. EDS analysis of test strips (k – m) befor test, (n - p) after AAT, (q - s) after sweat dip test.*

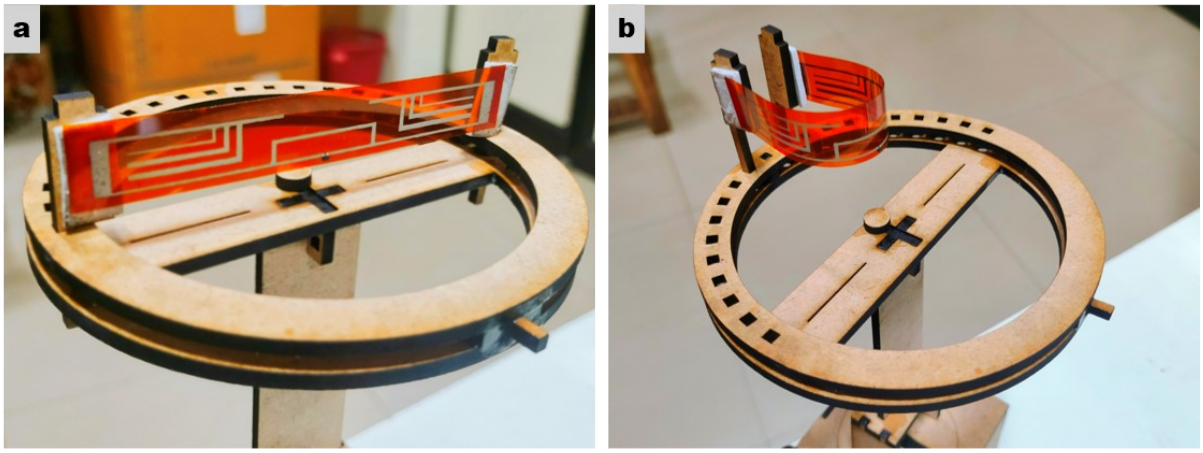

Figure S8 *Photograph of the tag under bending studies in custom-made setup, when bending radii was (a)infinity (∞), i.e., zero bending, and (b) 0.8 cm.*

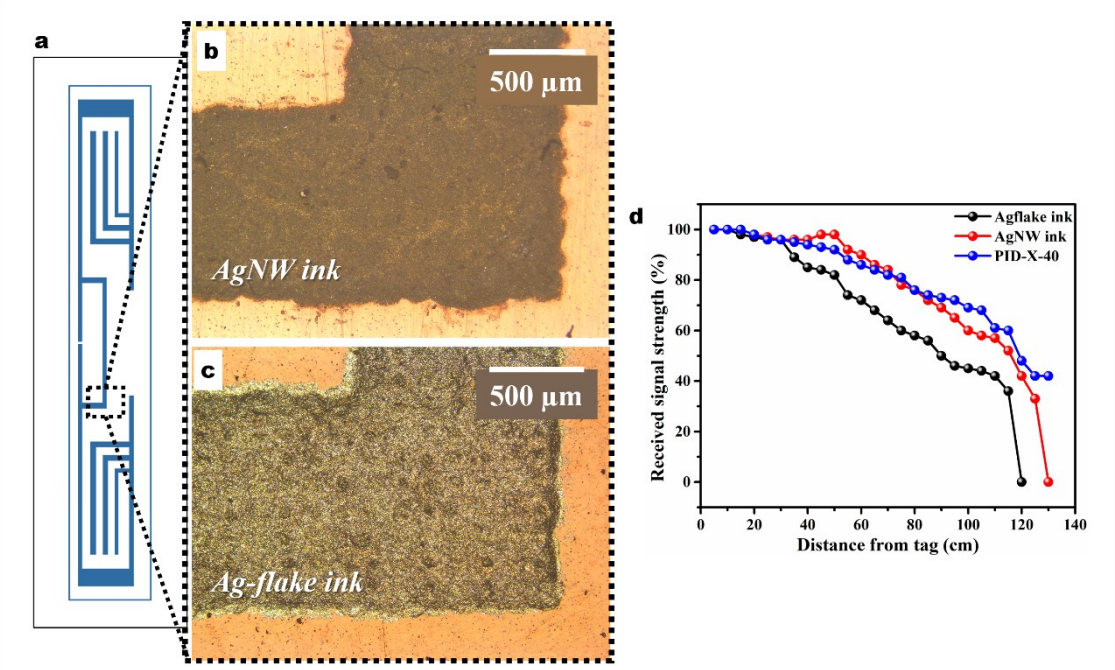

Figure S9 *Comparison of tags printed using the nanowire ink and nanoflake ink. (a) Schematic of the adopted antenna design. Optical micrographs of the antenna printed using (b) AgNW ink, and (c) Ag-nanoflake ink. (e) Variation in received signal strength of the NW tag, NF tag and commercial PID-X40 tags.*