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

Supporting Information (SI)

Ultrasensitive and highly repeatable pen ink decorated cuprammonium rayon (Cupra) fabric for multifunctional sensors

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Table S1

The unit pen ink loading on CF and corresponding loading loss ratio after 10 cycles of water sensing

	PC-1	PC-2	PC-3	PC-4
pen ink loading ($mg \cdot cm^{-2}$)	1.26	2.32	4.68	8.20
pen ink loading loss ratio (%)	2.6%	2.1%	1.7%	3.6%

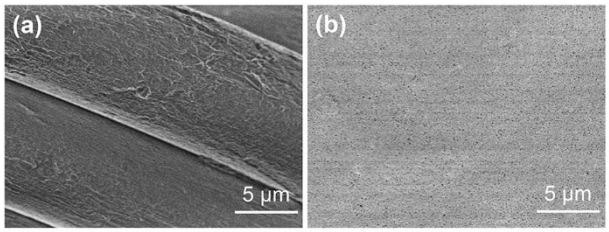

Fig. S1 SEM images of pure CF (a) and PCF (b).

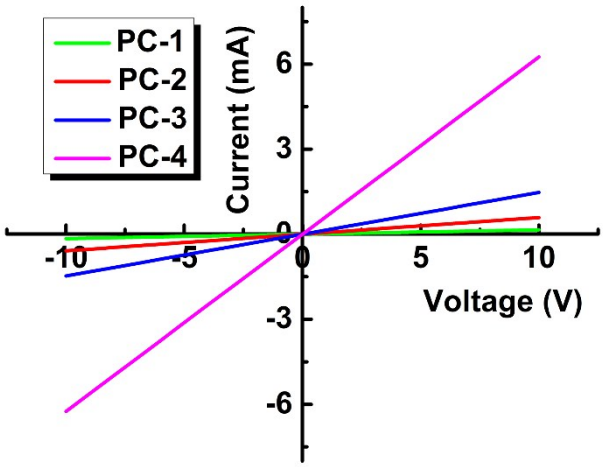

Fig. S2 Typical current-voltage (I-V) characteristic of PCF with different dipping repetitions.

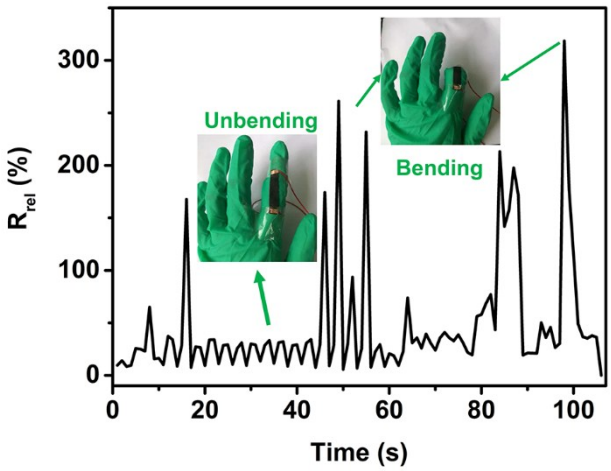

Fig. S3 R_{rel} change pertaining to the bending and straightening of finger versus time for finger motion detection.

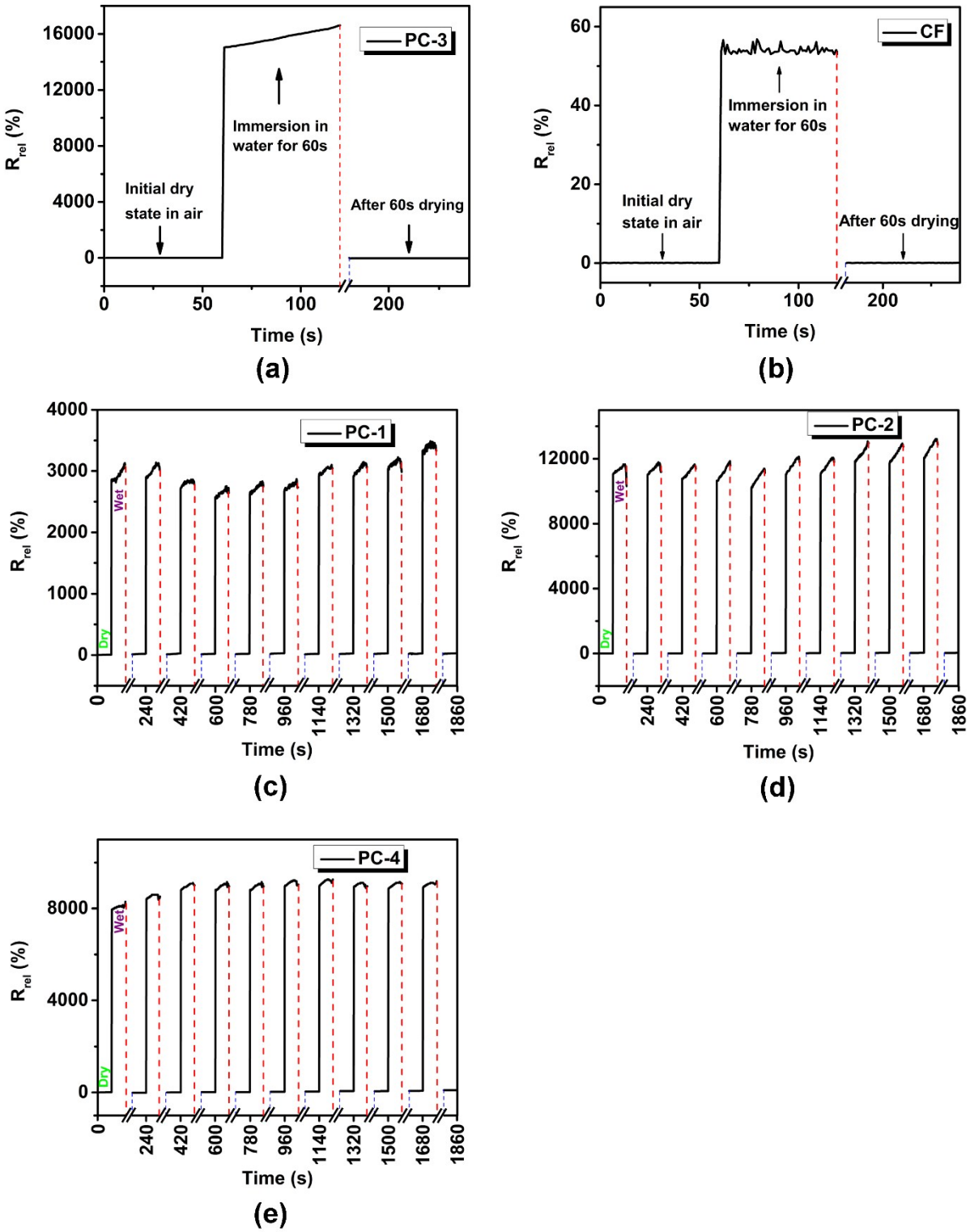

Fig. S4 Electrical response to liquid water for PCF and pure CF. R_{rel} response of PC-3 fabric (a) and pure CF (b) versus time during immersion/drying procedure in liquid water at 10 °C. R_{rel} response of PC-1 (c), PC-2 (d), PC-4 (e) fabric versus time undergoing 10 cycles of immersion/drying procedures in liquid water at 10 °C.

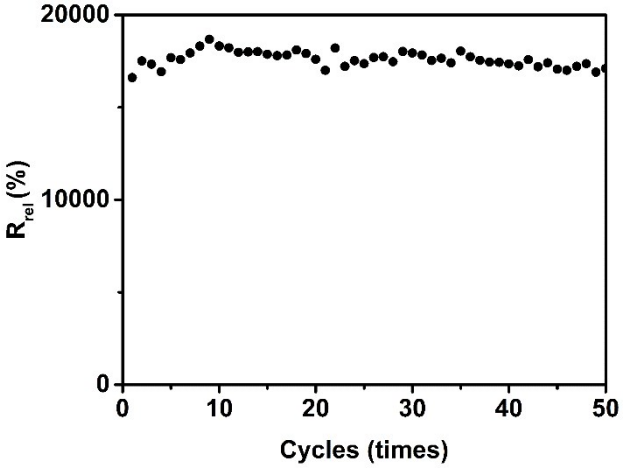

Fig. S5 R_{rel} response of PC-3 fabric after 60s immersion in liquid water at 10 °C undergoing 50 cycles of immersion/drying procedures.

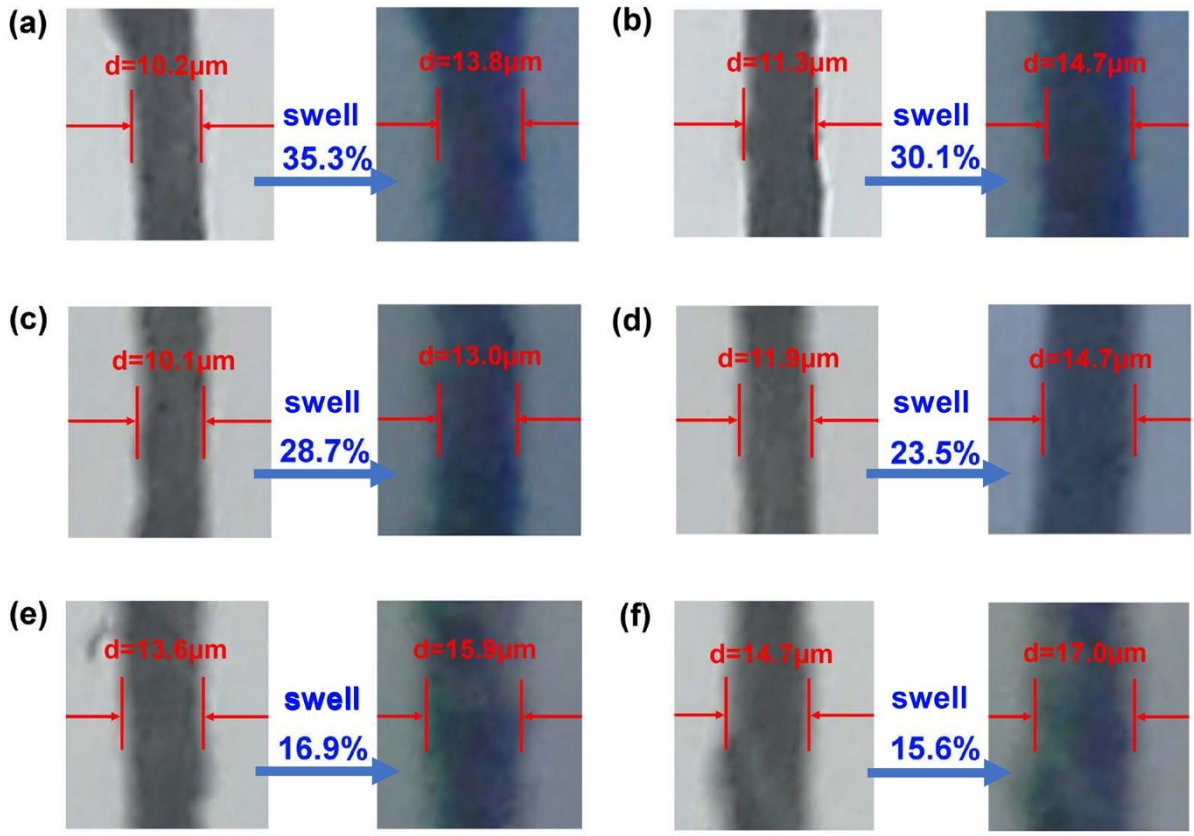

Fig. S6 Optical microscope images of PC-3 fiber in its initial dry state and after 60s immersion in liquid water at 10 °C (a), 20 °C (b), 30 °C (c), 40 °C (d), 50 °C (e) and 60 °C (f), respectively.

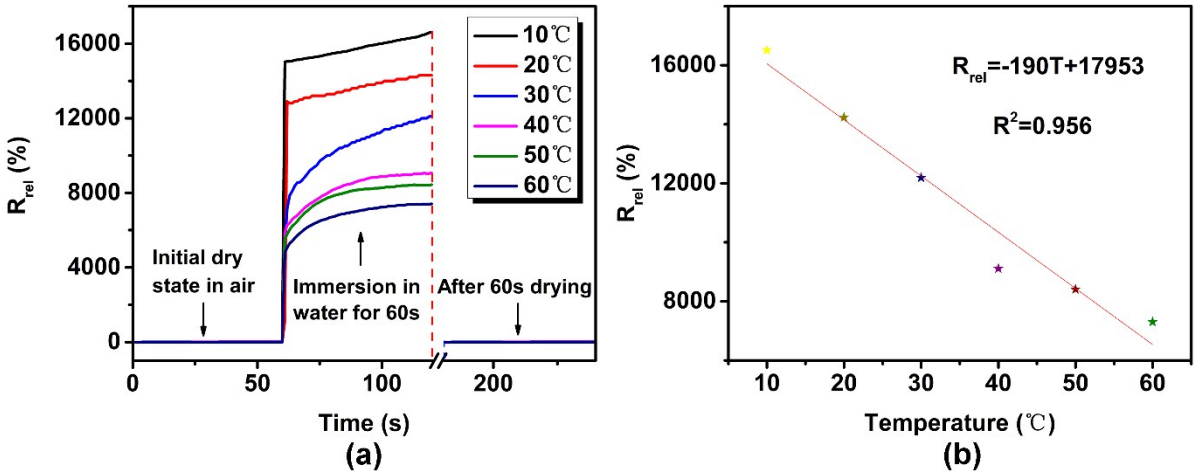

Fig. S7 (a) R_{rel} response to liquid water for PC-3 fabric versus time at different liquid temperature condition. (b) R_{rel} response to liquid water for PC-3 fabric after 60s immersion in water depending on water temperature.