Supporting Information

Fully Printed PEDOT:PSS-based Temperature Sensor with High Humidity Stability for Wireless Healthcare Monitoring

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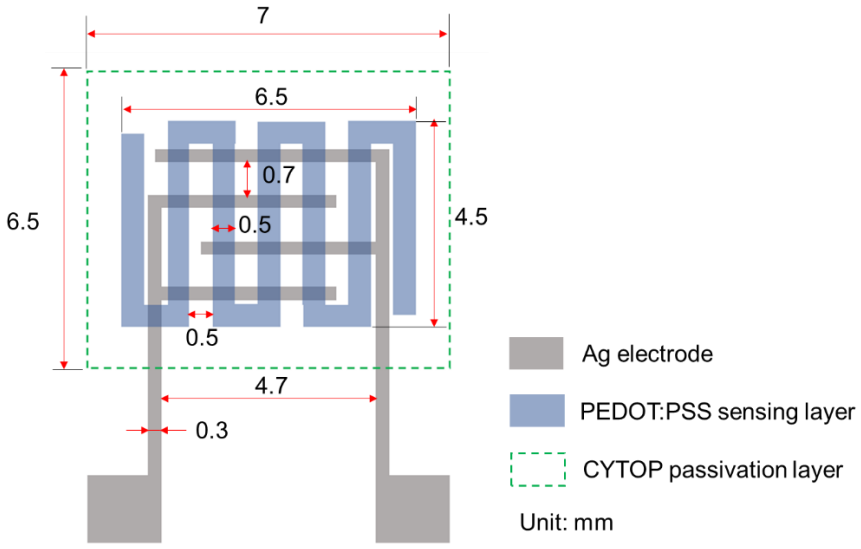

Figure S1. The geometry of the printed temperature sensor

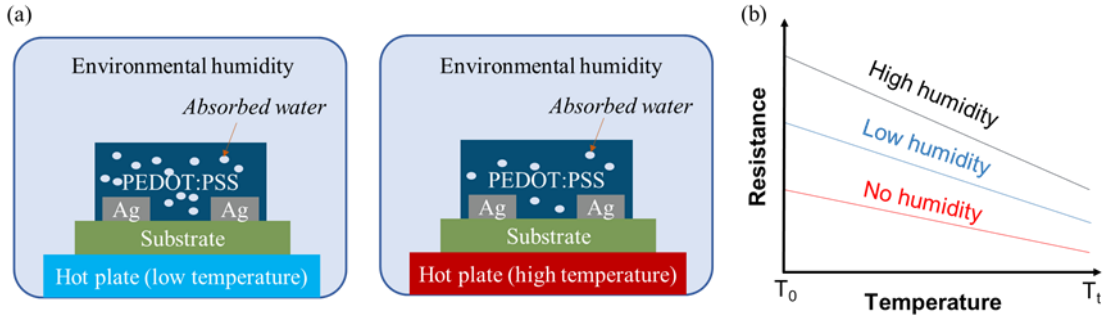

Figure S2. (a) illustration of humidity absorption and desorption of the temperature sensor. (b) illustration of resistance change of temperature sensor to the temperature and humidity.

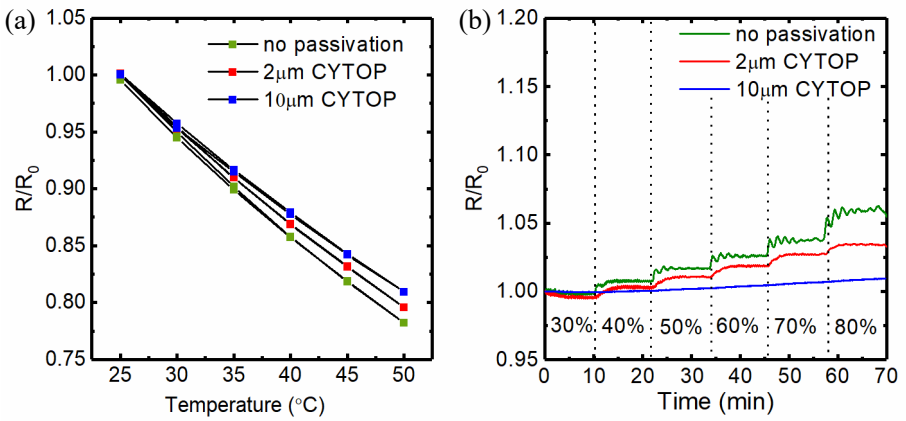

Figure S3. (a) Temperature-dependent relative resistance changes of temperature sensors with different thickness of passivation layers (no passivation, 2μm, and 10μm). (b) humidity-dependent relative resistance changes of temperature sensors with different thickness of passivation layers (no passivation, 2μm, and 10μm).

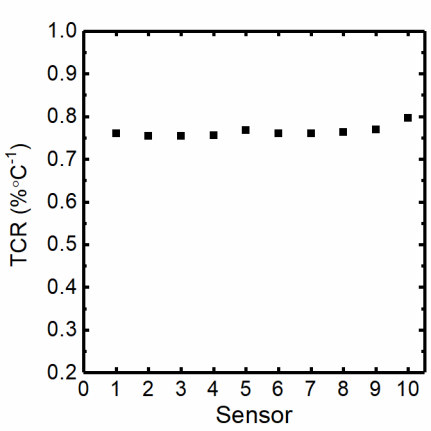

Figure S4. TCR of 10 printed sensors extracted from Figure 3d

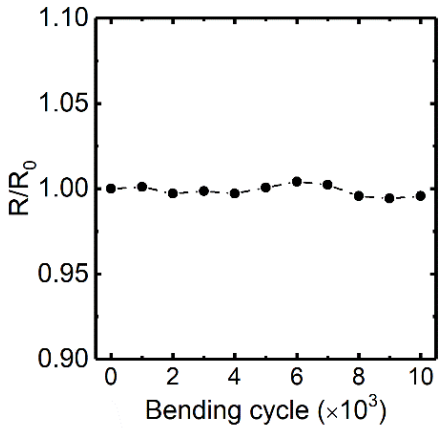

Figure S5. Relative resistance changes of printed temperature sensor concerning the bending cycles of up to 10000 cycles (5mm).

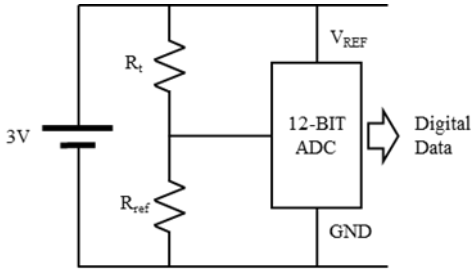

Figure S6. Simplified circuit diagram of the printed temperature sensor, the resistance of sensor (R_t) and reference resistor (R_{ref}) are 75KΩ,

Table S1. Summary of some wearable temperature sensors and their power consumption.

Sensitive Material [a)]	Power Consumption	Device type	Reference
Crosslinked PEDOT:PSS	30 μW	thermistor	This work
Mg	41 μW	thermistor	[S1]
CNT yarn	4.4 mW	thermistor	[S2]
Au	1 mW	thermistor	[S3]

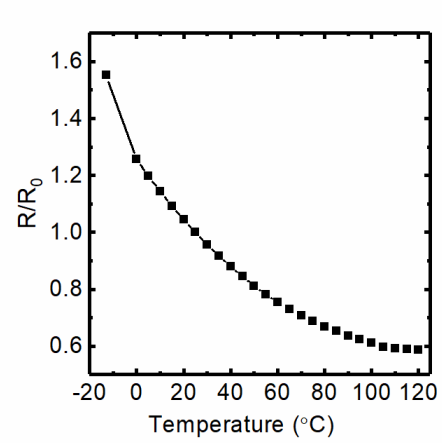

Figure S7. Temperature-dependent relative resistance changes of temperature sensors on extended temperature range. Sensor performance at the temperature below -13°C was not measured, due to the limitation of measurement equipment.

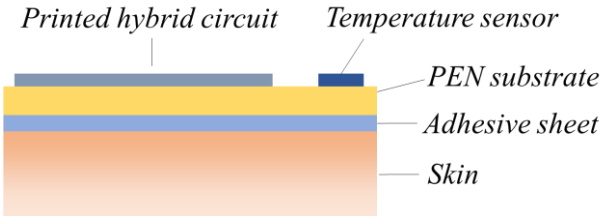

Figure S8. Illustration of the attachment of sensor on human skin

References

S1. Salvatore, GA. et al. Biodegradable and Highly Deformable Temperature Sensors for the Internet of Things. *Adv. Mater.* **27**, 1702390 (2017).

S2. Dinh, T. et al. Environment-friendly carbon nanotube based flexible electronics for noninvasive and wearable healthcare. *J. Mater. Chem. C*. **4**, 10061 (2016).

S3. Webb, CR. et al. Ultrathin conformal devices for precise and continuous thermal characterization of human skin. *Nat. Mater.* **12**, 938 (2013)