

• Supplementary File •

A Flexible Ion–Electronic Sensor Device with Thermal Drift Suppression for Decoupled Pressure–Temperature Sensing

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1 Supplementary Note 1: Optical photograph of the IEPTS device.

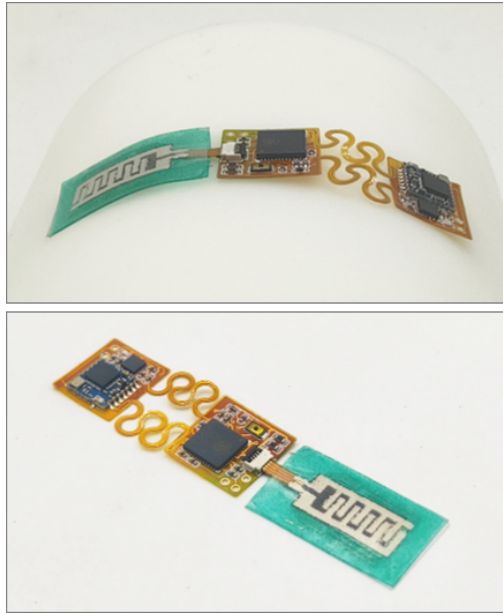


Figure S1 (Color online) Optical photograph of the IEPTS device.

2 Supplementary Note 2: The front and back PCB design of the signal acquisition system.

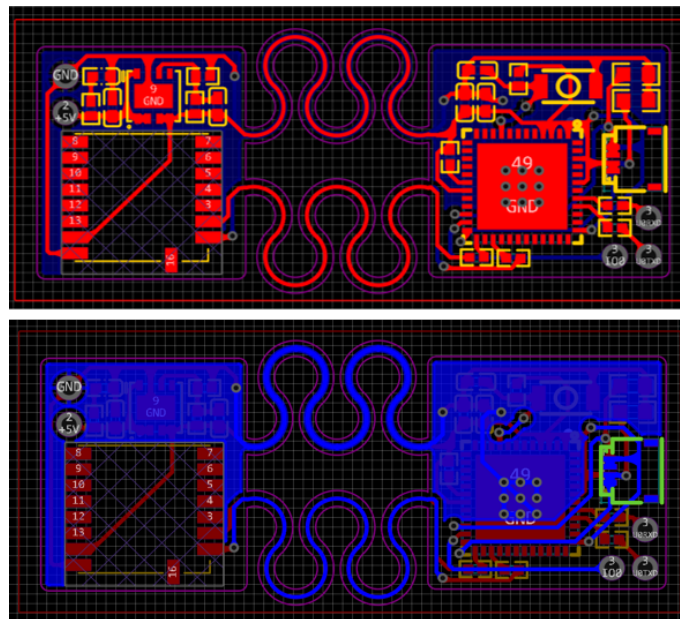


Figure S2 (Color online) The front and back PCB design of the signal acquisition system.

3 Supplementary Note 3: The schematic diagram of signal acquisition system.

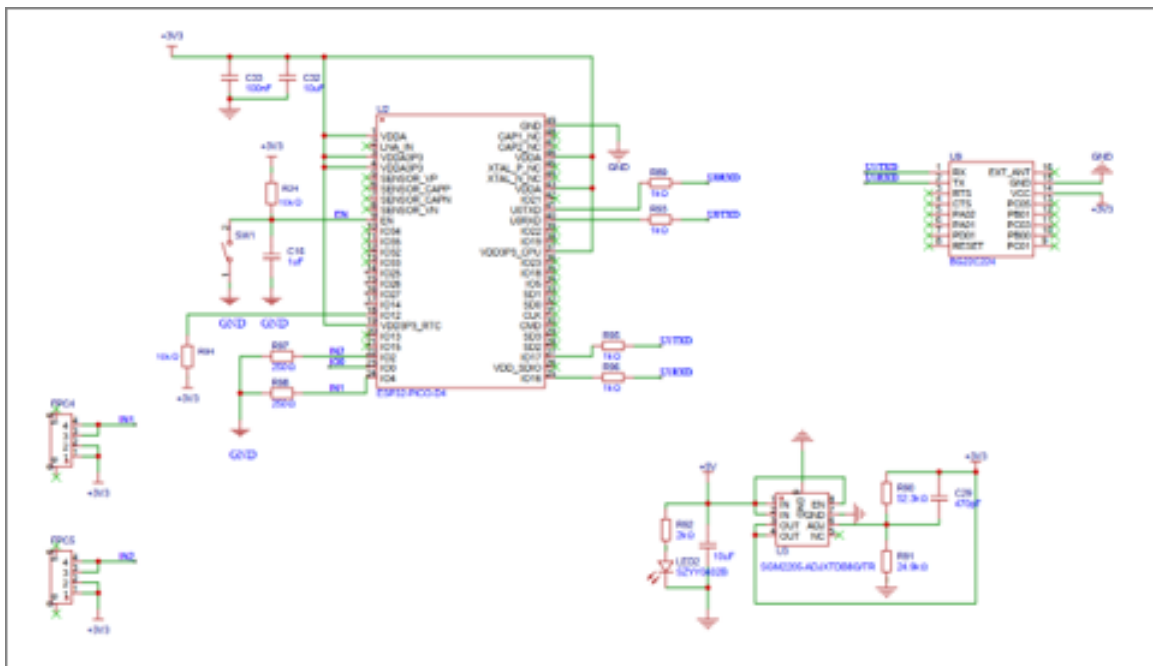


Figure S3 (Color online) The schematic diagram of signal acquisition system.

4 Supplementary Note 4: Printable sensitive layer ink.

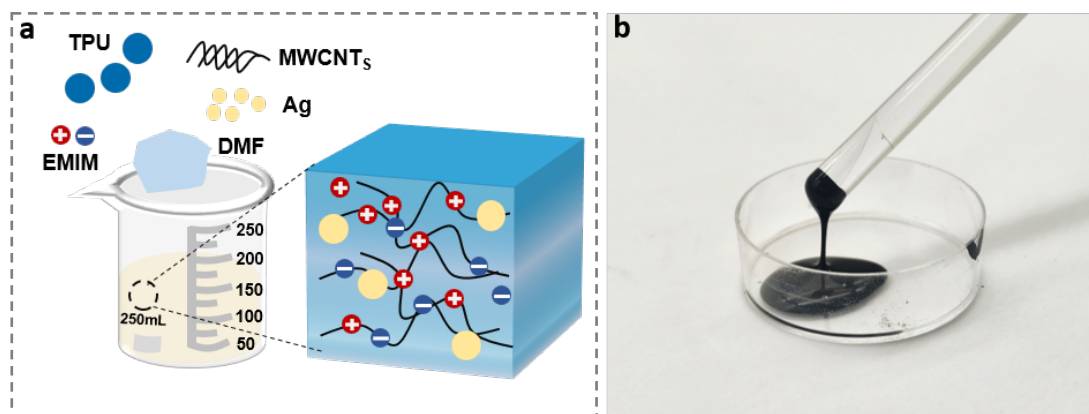
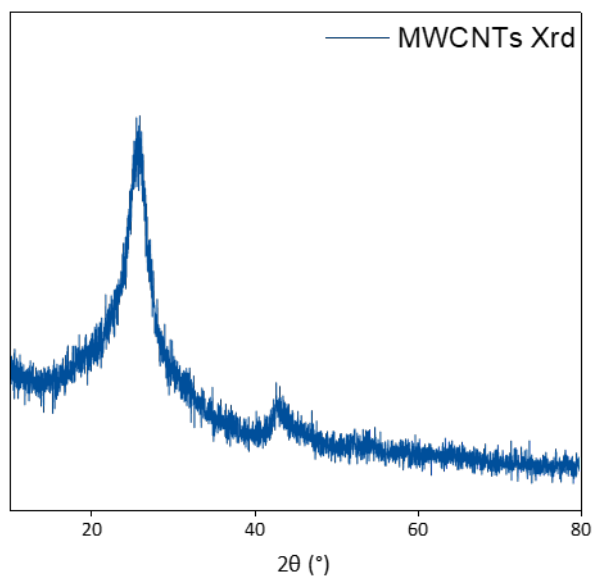


Figure S4 (Color online) a Schematic illustration of the composition of the sensitive layer ink. b Photograph of the printable sensitive ink.

5 Supplementary Note 5: X-ray diffraction (XRD) pattern of MWCNTs.



b

Figure S5 (Color online) X-ray diffraction (XRD) pattern of MWCNTs.

6 Supplementary Note 6: Surface SEM image of flake silver powder.

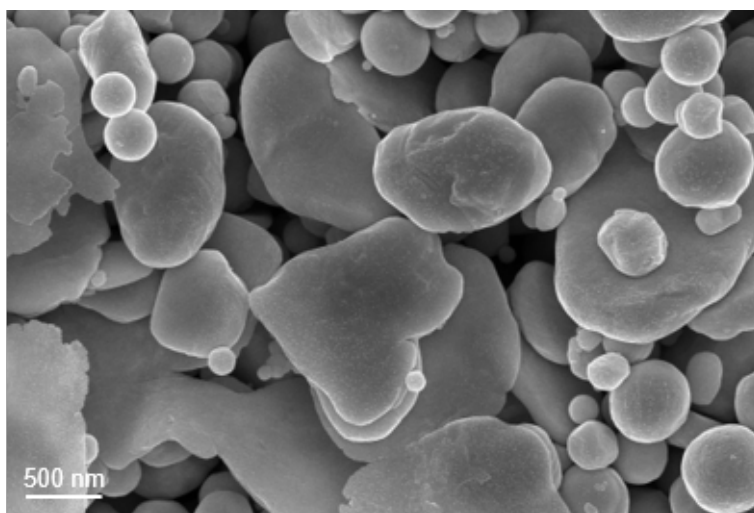


Figure S6 (Color online) Surface SEM image of flake silver powder.

7 Supplementary Note 7: EDS spectrum of the sensitive layer material in the pressure sensor.

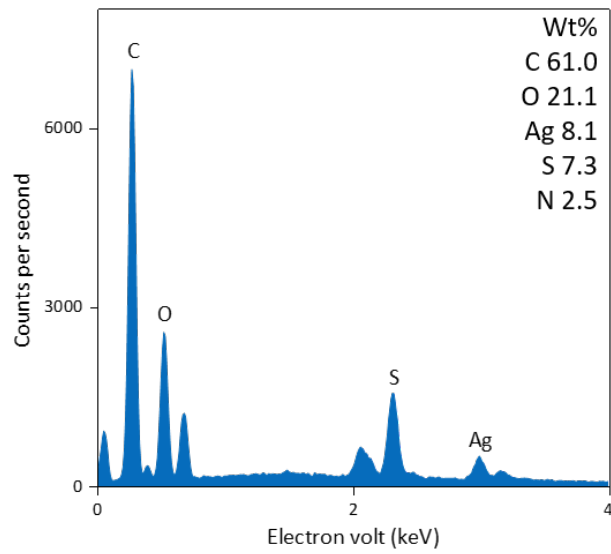


Figure S7 (Color online) EDS spectrum of the sensitive layer material in the pressure sensor.

8 Supplementary Note 8: Equipment used for sensor performance testing.

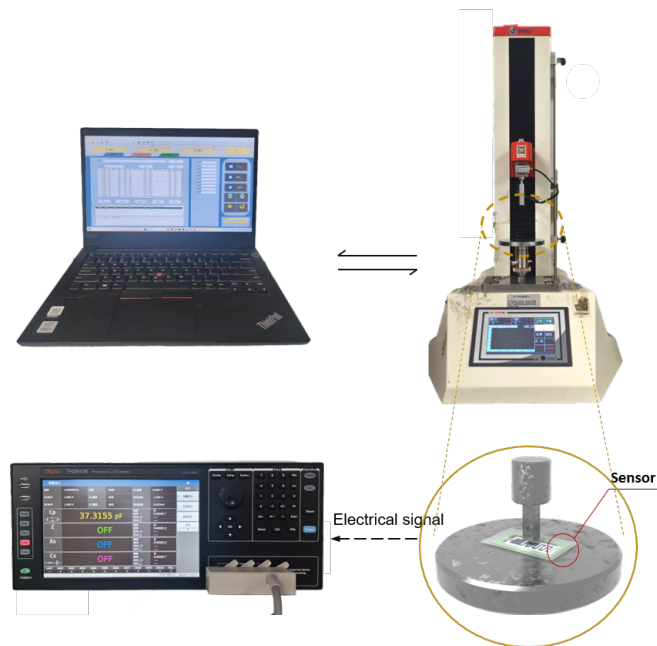


Figure S8 (Color online) Equipment used for sensor performance testing.

9 Supplementary Note 9: Temperature measurement setup.



Figure S9 (Color online) Equipment used for sensor performance testing.

10 Supplementary Note 10: Temperature data from the IEWPTS during the hot water test.

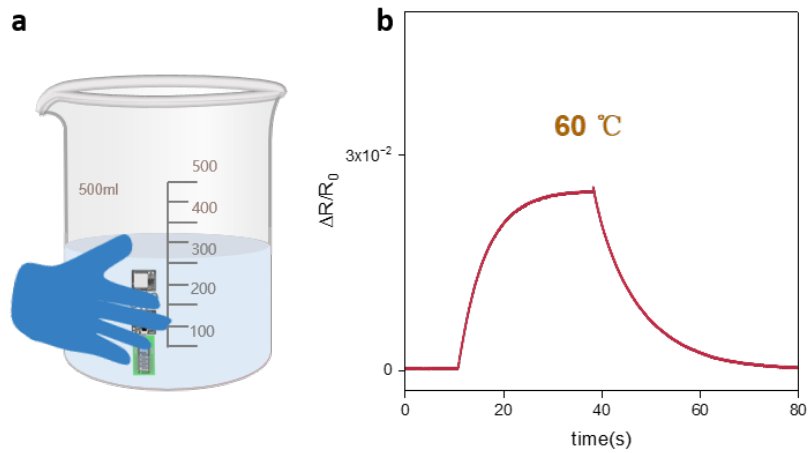


Figure S10 (Color online) **a** Schematic diagram of the sensor attached to the cup. **b** Test data before and after attaching the temperature sensor to the cup.

11 Supplementary Note 11: IEPTS measures pulse data based on a pulse diagnosis training device.

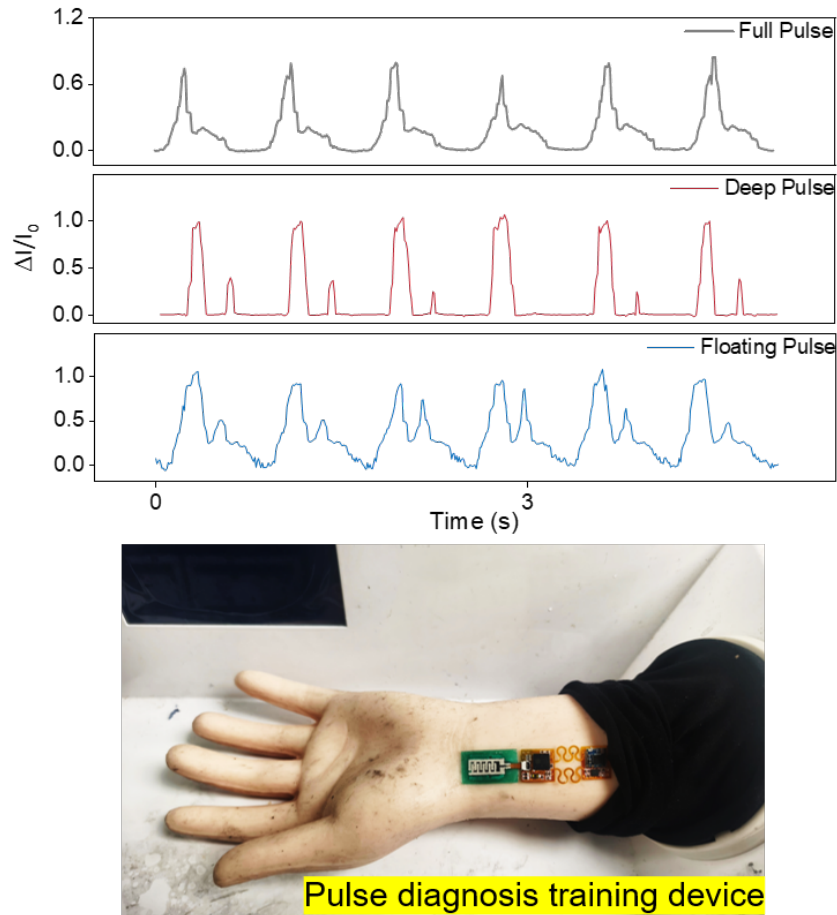


Figure S11 (Color online) IEPTS measures pulse data based on a pulse diagnosis training device.

12 Supplementary Note 12: Human pulse signal data measured using the IEPTS system.

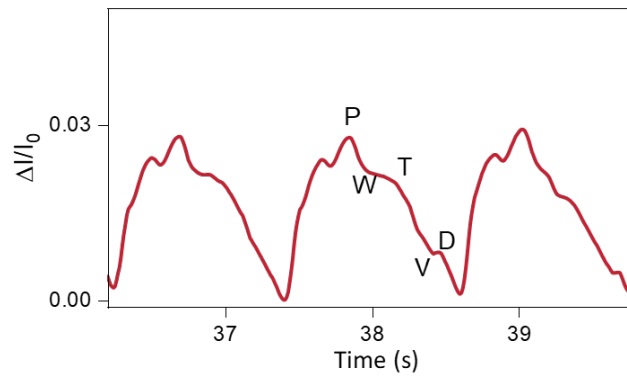


Figure S12 (Color online) Human pulse signal data measured using the IEPTS system.

13 Supplementary Note 13: Throat pressure signals were clustered using t-SNE dimensionality reduction combined with GMM and hierarchical clustering algorithms.

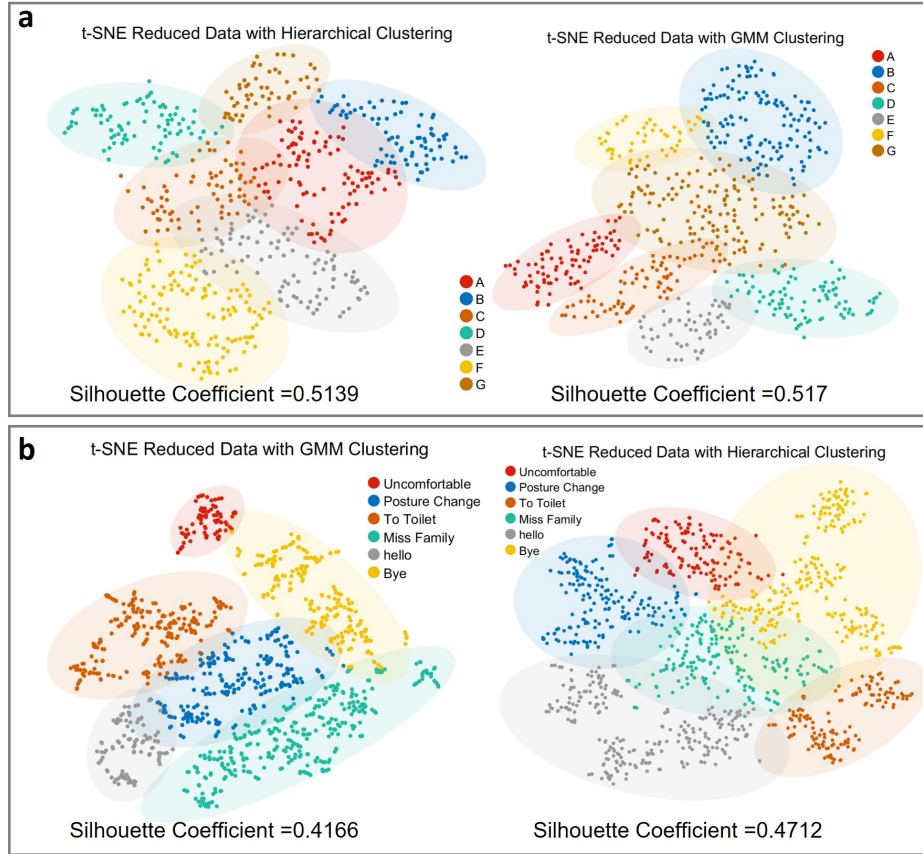


Figure S13 (Color online) a Clustering results of pronunciation samples for letters A–G; b Clustering results of commonly used spoken phrases by patients.

14 Supplementary Note 14: Schematic diagram of a wing with positive and negative angles of attack.

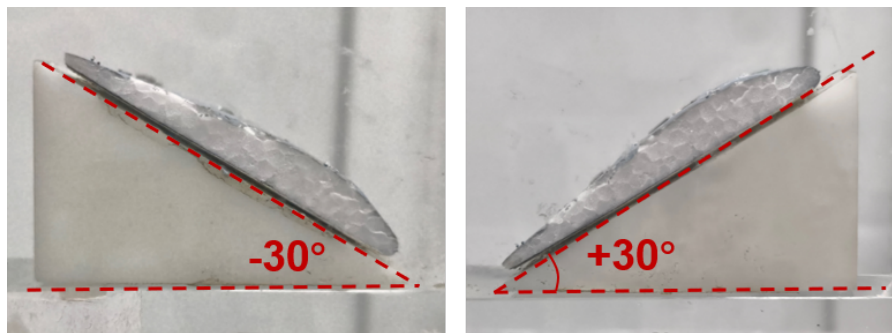


Figure S14 (Color online) Schematic diagram of a wing with positive and negative angles of attack.

15 Supplementary Note 15: Summary of flexible temperature sensors with different response mechanisms.

Table S1. Summary of flexible temperature sensors with different response mechanisms

Mechanism	Material	Temp. range (°C)	Linearity	Response/Recovery time (s)	Reference
Thermo-resistive	Ag/TPU	10-94	0.998	0.37/1.92	This work
Thermo-sensitive	Graphene/PDMS	30~70	0.996	22.4/31	[1]
Thermo-sensitive	NIPAM/AAm/GO	10~74	-	0.1/0.12	[2]
Thermo-sensitive	PU/Graphene/PEDOT: PSS	30~50	0.98	17/26	[3]
Thermo-sensitive	PEDOT: PSS/CNT	-30~90	0.996	19/-	[4]
Thermo-sensitive	CNT/graphene	12.5~93.7	-	2.95/15.1	[5]
Thermo-sensitive	PANI/Graphene/PDMS	25~40	0.99	0.7/-	[6]
Thermo-sensitive	NCMA/LiTFSI	30~90	-	50/-	[7]
Thermo-sensitive	PEDOT: PSS	25~50	-	1.5/6	[8]
Capacitive	NaCl-organogel/Pt/PI	30~45	0.998	1.5/1	[9]
Thermo-electric	Te-Au hetero-nanowire	-140~80	0.995	10/-	[10]

Table S1 Summary of flexible temperature sensors with different response mechanisms

References

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