Supporting Information

Ultralow-cost piezoelectric sensor constructed by thermal compression bonding for long-term biomechanical signal monitoring in chronic mental disorders

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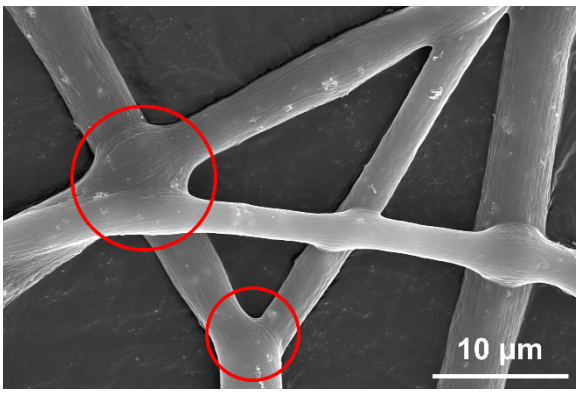

Fig. S1 The SEM image of 7 wt% PVDF/ZnO nanofiber film after thermal compression, with fiber fusion points highlighted by red circles.

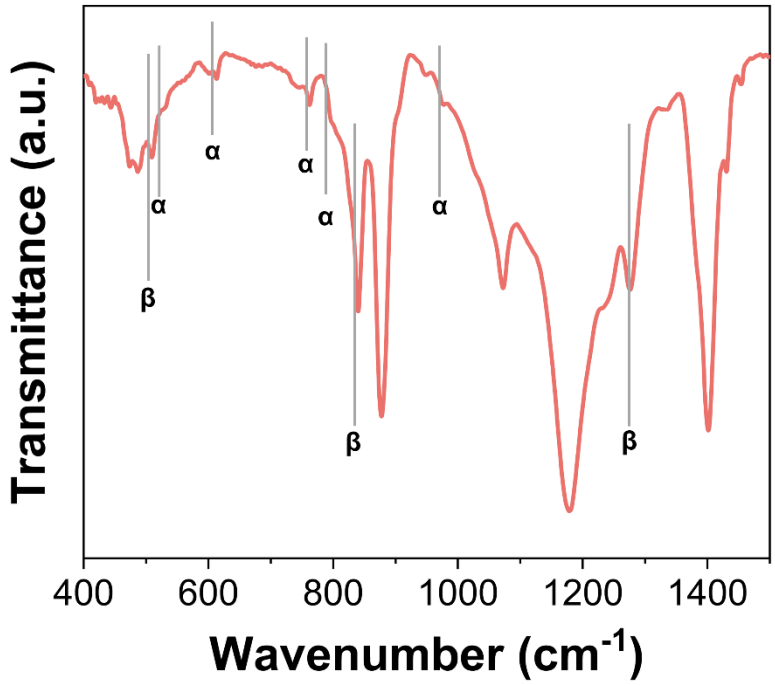

Fig. S2 The FTIR spectra of 7 wt% PVDF/ZnO nanofibers depicting the distribution of α- and β-phase.

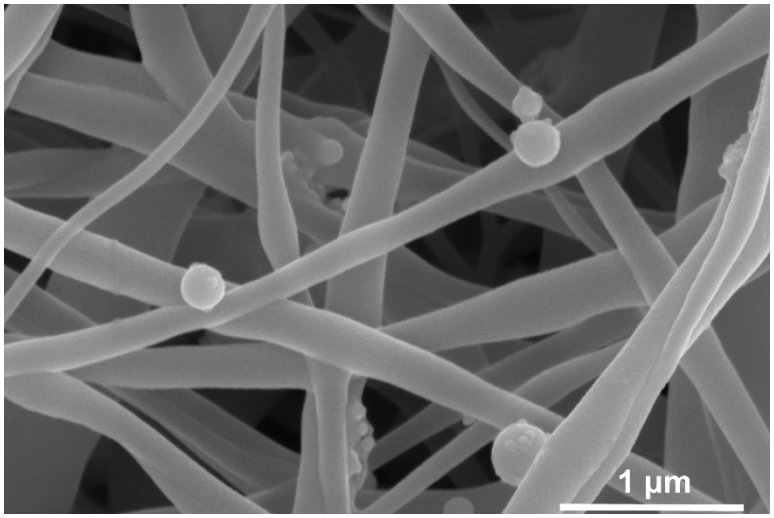

Fig. S3 The SEM image of ZnO nanoparticles falling on the fibers.

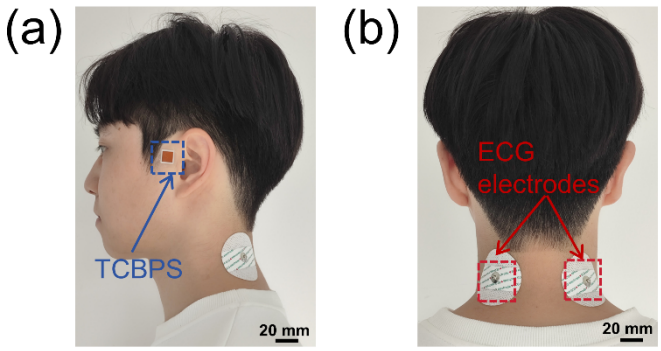

Fig. S4 Photographs of (a) the TCBPS attached to the preauricular skin and (b) the commercial Ag/AgCl electrodes attached to the back of the neck.

Fig. S5 A photograph of the TCBPS used to record speech signals affixed on the skin of a volunteer.

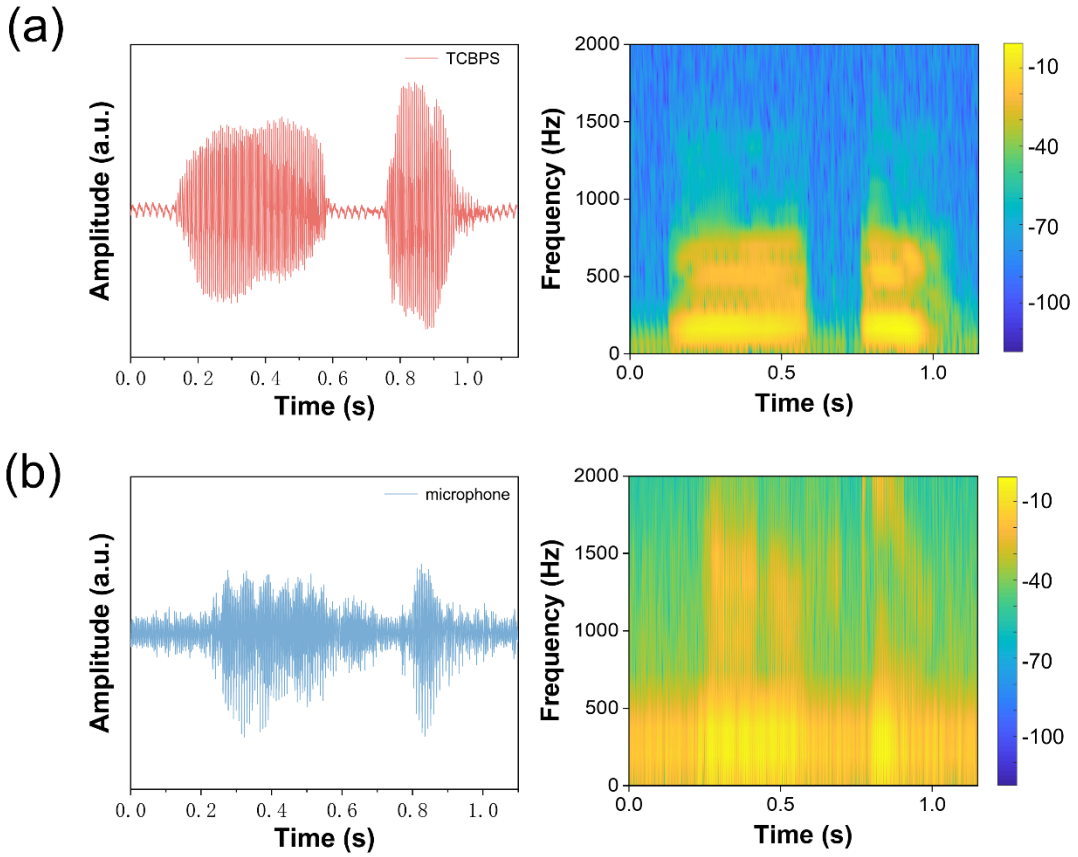

Fig. S6 Comparison of the phonation of "nanoscale" and corresponding time-frequency analysis of (a) the TCBPS and (b) the reference microphone.

Table S1. Total element distribution.

	At%	Wt%
C	61.03	48.58
O	3.86	4.10
F	34.09	42.93
Zn	1.01	4.40

Table S2. Comparison of the achieved sensitivity of the piezoelectric sensor obtained in this work with that in previously reported piezoelectric sensors.

Materials	Sensitivity	Reference
PZT/ PVDF	6.38 mV N^{-1}	1
PVDF/BaTiO3	6 mV N^{-1}	2
PVDF/SiC	0.4737 mV N^{-1}	3
PVDF/MWCNT/OMMT	10.9 mV N^{-1}	4
PVDF/CNT	2.26 mV N^{-1}	5
PVDF	9.717 mV N^{-1}	6
PVDF/ZnO	13.4 mV N^{-1}	This work

Table S3. The model classification accuracy for 4 emotions.

	Happy	Calm	Sad	Angry	Total
Accuracy	66.67%	33.33%	100%	100%	75%

Supplementary References

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