Supporting Information

BSA/PEI/GOD Modified Cellulose Nanocrystals for Construction of Hydrogel-Based Flexible Glucose Sensors for Sweat Detection

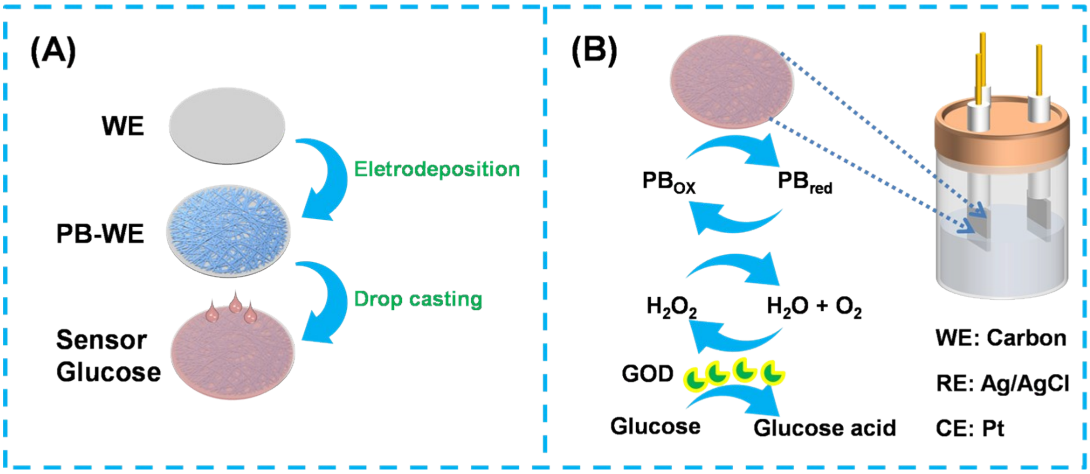
Tianjun Zhou, Pan Li, Yujie Sun, Wenxiang Wang, Liangjiu Bai*, Hou Chen*, Huawei Yang, Lixia Yang, Donglei Wei

School of Chemistry and Materials Science, Ludong University, Key Laboratory of High Performance and Functional Polymer in the Universities of Shandong Province, Collaborative Innovation Center of Shandong Province for High Performance Fibers and Their Composites, Yantai 264025, China.

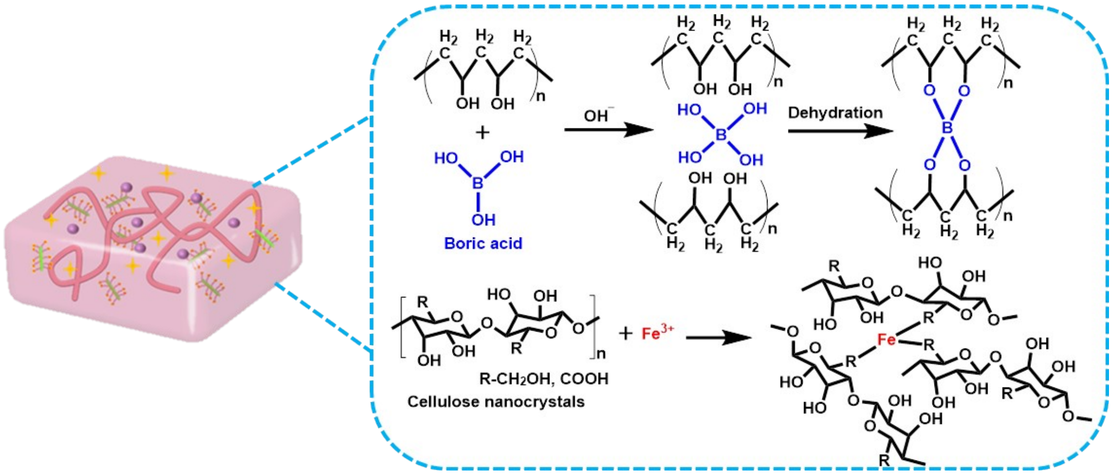
Corresponding Authors

*L.B. Phone: +86 535 6669070. E-mail: bailiangjiu@ldu.edu.cn.

*H.C. Phone: +86 535 6669070. E-mail: chenhou@ldu.edu.cn.



Scheme S1. Preparation of glucose sweat sensor. (B) Mechanism diagram of glucose detection by sweat sensor.



Scheme S2. Diagram of crosslinking mechanism of CBPG hydrogel.

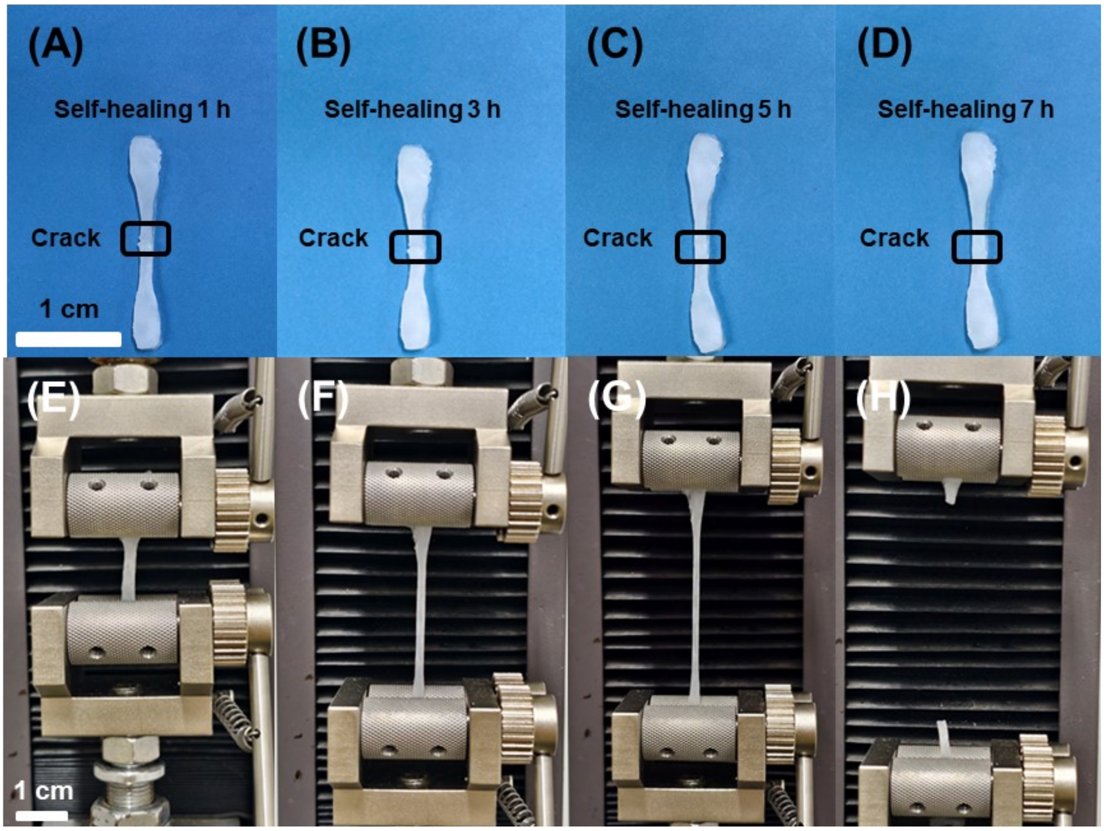


Fig. S1. Self-healing images of CPBG hydrogel at 1h, 3h, 5h and 7h respectively. Physical diagram of CBPG hydrogel from beginning to breaking ((E)-(H)).

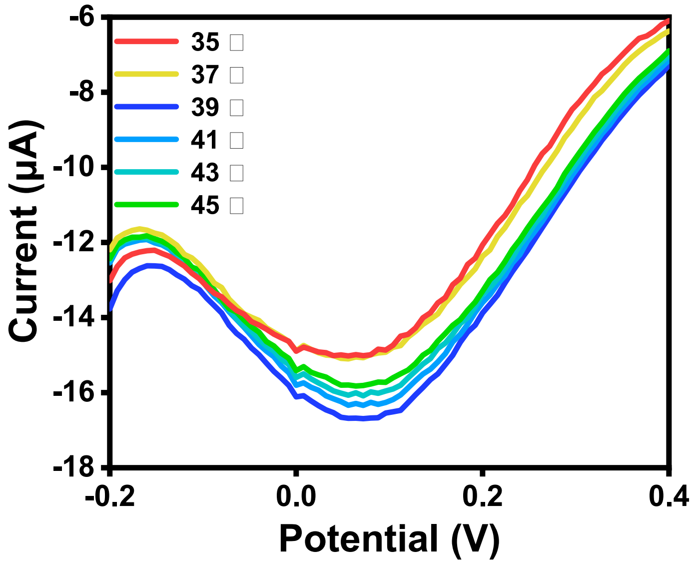


Fig. S2. DPV electrochemical response of CPBG hydrogels at different temperatures.

Table S1. Table for studying common disturbances in sweat.

Ionic species			Small molecules		Monosaccharide	
1	**2**	**3**	**4**	**5**	**6**	**7**
NaCl	**KCl**	**$MgCl_2$**	**Urea**	**Lactate**	**Fructose**	**Glucose**
0.5 mM	**0.5 mM**	**0.5 mM**	**0.5 mM**	**0.5 mM**	**0.5 mM**	**50 μM**

Table S2. Comparison of CBPG hydrogel sweat sensor with other works.

Electtode	Type	Linear range (μM)	LOD (μM)	Ref
GPAN/PB/SPE	**Enzymatic**	**1-100**	**0.9**	**Our work**
MPA-based patch	**Enzymatic**	**50-1.4 mM**	**26**	**S1**
PB-PEDOT NC	**Enzymatic**	**6.25μM-0.8 mM**	**4**	**S2**
GAH-TES	**Enzymatic**	**0-0.5 mM**	**98.84**	**S3**
Pt-Ni dual hydrogels	**Enzymatic**	**0-2.5**	**67**	**S4**
Pt/MXene	**Enzymatic**	**0-8 mM**	**29.15**	**S5**
Nf/GOx-ZnO/A	**Enzymatic**	**0-31.6**	**4.6**	**S6**

S1 Dervisevic, M.; Alba, M.; Esser, L.; Tabassum, N.; Prieto-Simon, B.; Voelcker, N. H. Silicon Micropillar Array-Based Wearable Sweat Glucose Sensor. *ACS Appl. Mater. Interfaces* 2022, **14**, 2401–2410.

S2 Xu, Z.; Qiao, X.; Tao, R.; Li, Y.; Zhao, S.; Cai, Y.; Luo, X. A Wearable Sensor Based on Multifunctional Conductive Hydrogel for Simultaneous Accurate pH and Tyrosine Monitoring in Sweat. *Biosens. Bioelectron.* 2023, **234**, 115360.

S3 Kanokpaka, P.; Chang, Y. H.; Chang, C. C.; Rinawati, M.; Wang, P. C.; Chang, L. Y.; Yeh, M. H. Enabling Glucose Adaptive Self-Healing Hydrogel Based Triboelectric Biosensor for Tracking a Human Perspiration. *Nano Energy* 2023, **112**, 108513.

S4 Li, G.; Wang, C.; Chen, Y.; Liu, F.; Fan, H.; Yao, B.; Hao, J.; Yu, Y.; Wen, D. Dual Structural Design of Platinum‐Nickel Hydrogels for Wearable Glucose Biosensing with Ultrahigh Stability. *Small* 2023, **19**, 2206868.

S5 Li, Q. F.; Chen, X.; Wang, H.; Liu, M.; Peng, H. L. Pt/MXene-Based Flexible Wearable Non-Enzymatic Electrochemical Sensor for Continuous Glucose Detection in Sweat. *ACS Appl. Mater. Interfaces* 2023, **15**, 13290–13298.

S6 Ahmad, R.; Lee, B. I. Facile Fabrication of Palm Trunk–like ZnO Hierarchical Nanostructure–Based Biosensor for Wide-Range Glucose Detection. *Chem. Eng. J.* 2024, **492**, 152432.