Supplementary Information (SI) for Journal of Materials Chemistry A.

The Ga-Sb and Ga-AgCl liquid metal-based electrodes with self-healing for sweat pH Sensors

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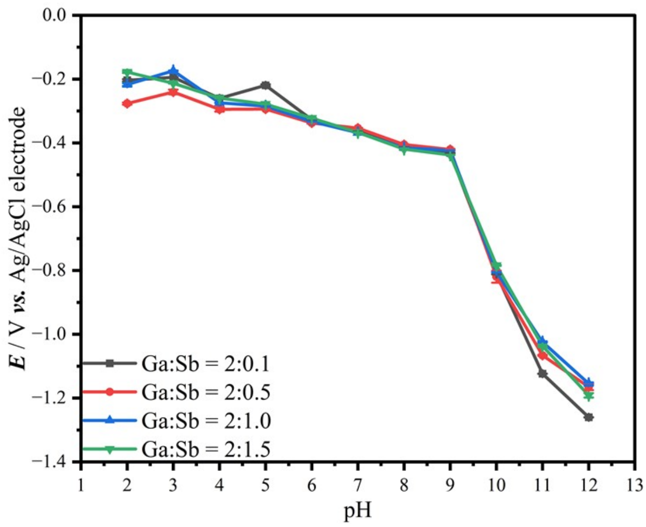

Figure S1. Effect of mass ratio of Ga-Sb on pH sensitivity of electrode.

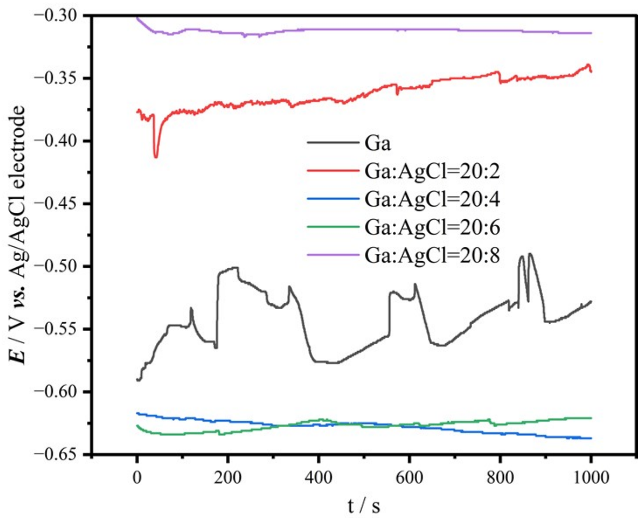

Figure S2. Effect of mass ratio of Ga-AgCl on stability of electrode.

As the Sb content increased, the linearity of the response had improved. The Ga-Sb electrode exhibited optimal linear response characteristics when the ratio. However, the electrode potential showed significant changes when the pH exceeded 9, which attributed to the chemical reactivity of Ga in alkaline environments. Therefore, the recommended operational pH range of the Ga-Sb electrode was limited in pH 2-9. The potential change of the, as depicted in, had been influenced by the mass ratio of Ga to AgCl. The stability of the Ga-AgCl electrode had been enhanced when the mass ratio of 20:4, 20:6, and 20:8 compared to pure Ga. The Ga-AgCl electrode has the best stability when the mass ratio is 20:8.

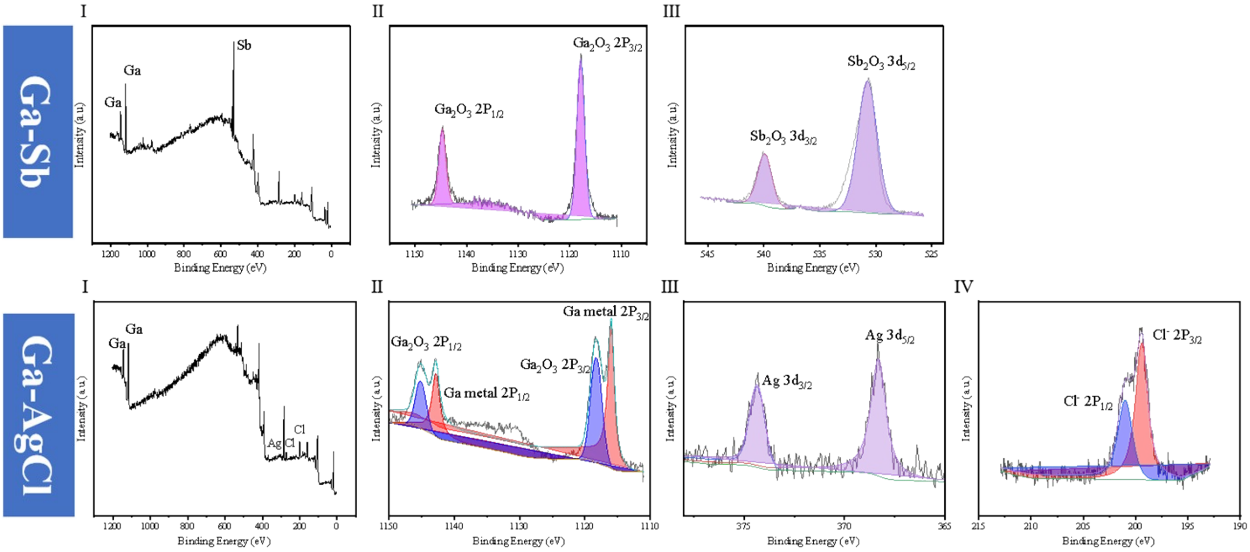

Figure S3. The XPS test of Ga, Ga-Sb and Ga-AgCl electrode.

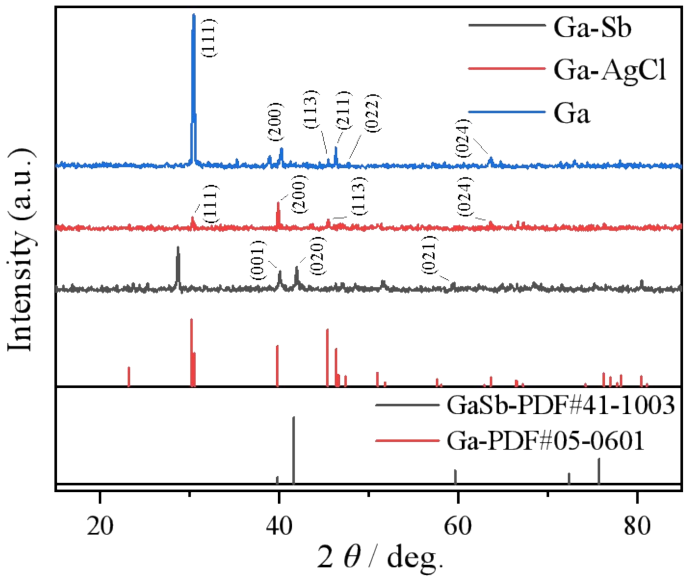

Figure S4. The XRD test of Ga, Ga-Sb and Ga-AgCl electrode.

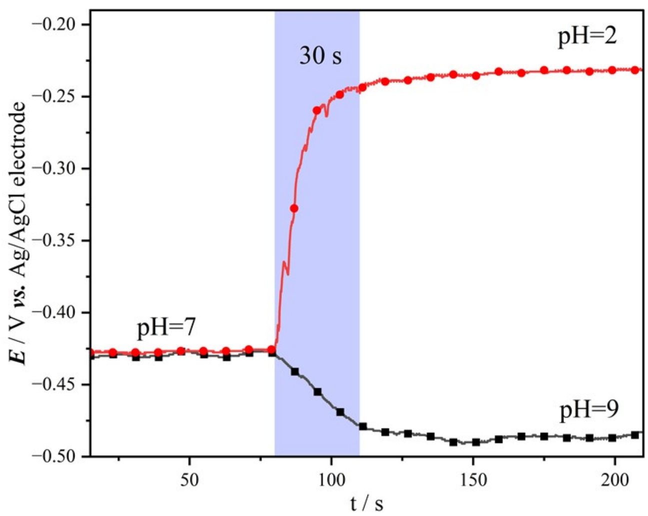

Figure S5. Response time of Ga-Sb electrode.

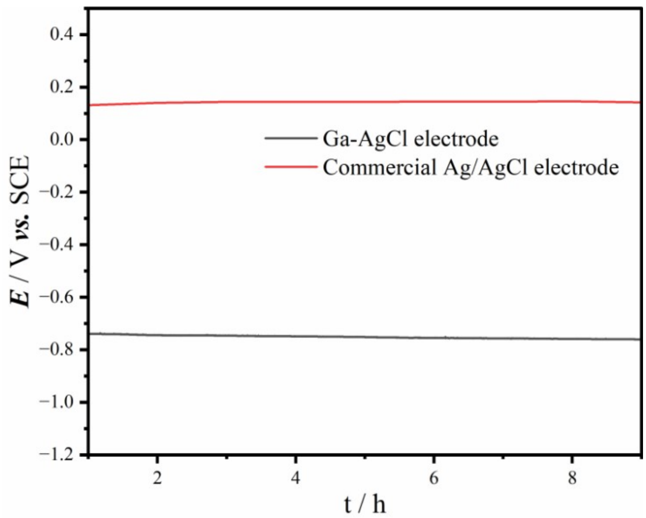

Figure S6. Comparison of stability between Ga-AgCl electrode and commercial Ag/AgCl electrode.

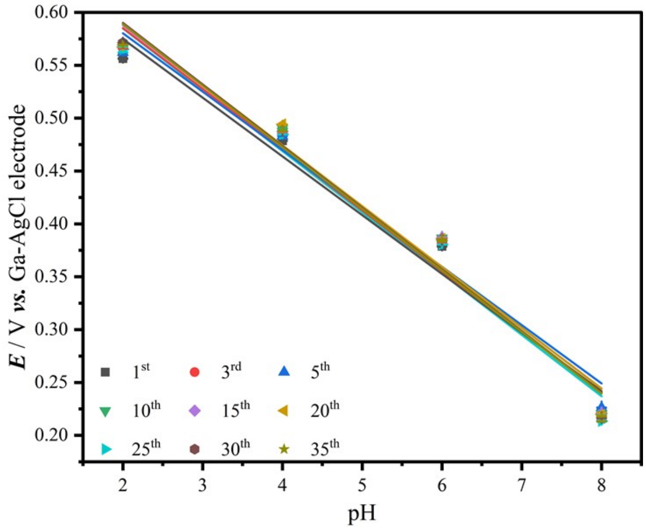

Figure S7. The long-term stability of the prepared sensor confirmed with the pH monitoring for 35 days.

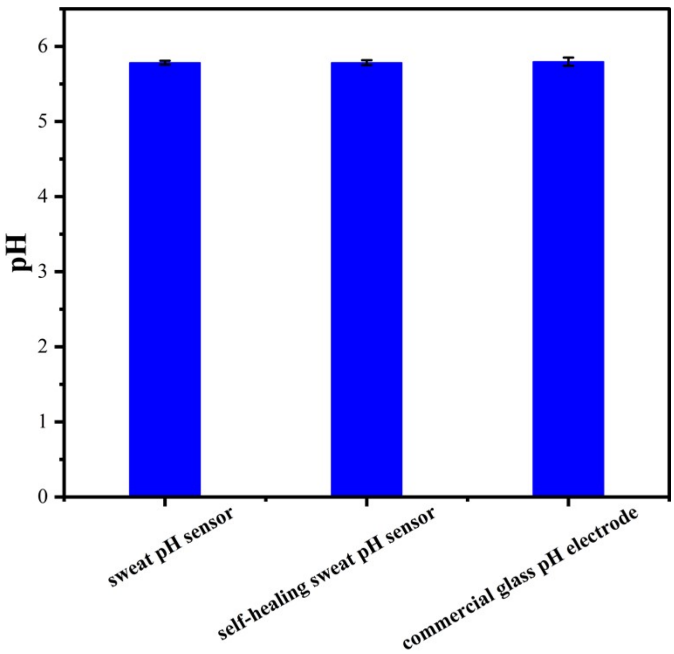

Figure S8. sweat pH testing was used to verify the accuracy of sweat pH sensors, repaired sweat pH sensors, and commercial glass pH sensors.

Table S1. The pH response comparation between Ga-Sb electrode and other metal pH electrode.

Material	Sensitivity (mV/pH)	Response time (s)	pH range	Hysteres -is(mV)	Stability	Ref.
RuO_2	-58.05	2	2-10		-0.8 mV/h	[1]
IrO_2-RuO_2	-50.8	4-13.5	2-12		1.5 mV/d	[2]
Ag-Sb	-54.6	26	2-12	3	0.5 mV/h	[3]

TiN	-59.1			1.2	3.9 mV/h	[4]
H_xWO_3	-53.64	10-45	1-11	6.7		[5]
glass	-48	8	4-10		5 mV/h	[6]
Ga-Sb	-61	30	2-9	12	1.5 mV/h	This work

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