

## Supplementary Materials

# Solid-Contact Potentiometric Anion Sensing Based on Classic Silver/Silver Insoluble Salts Electrodes without Ion-Selective Membrane

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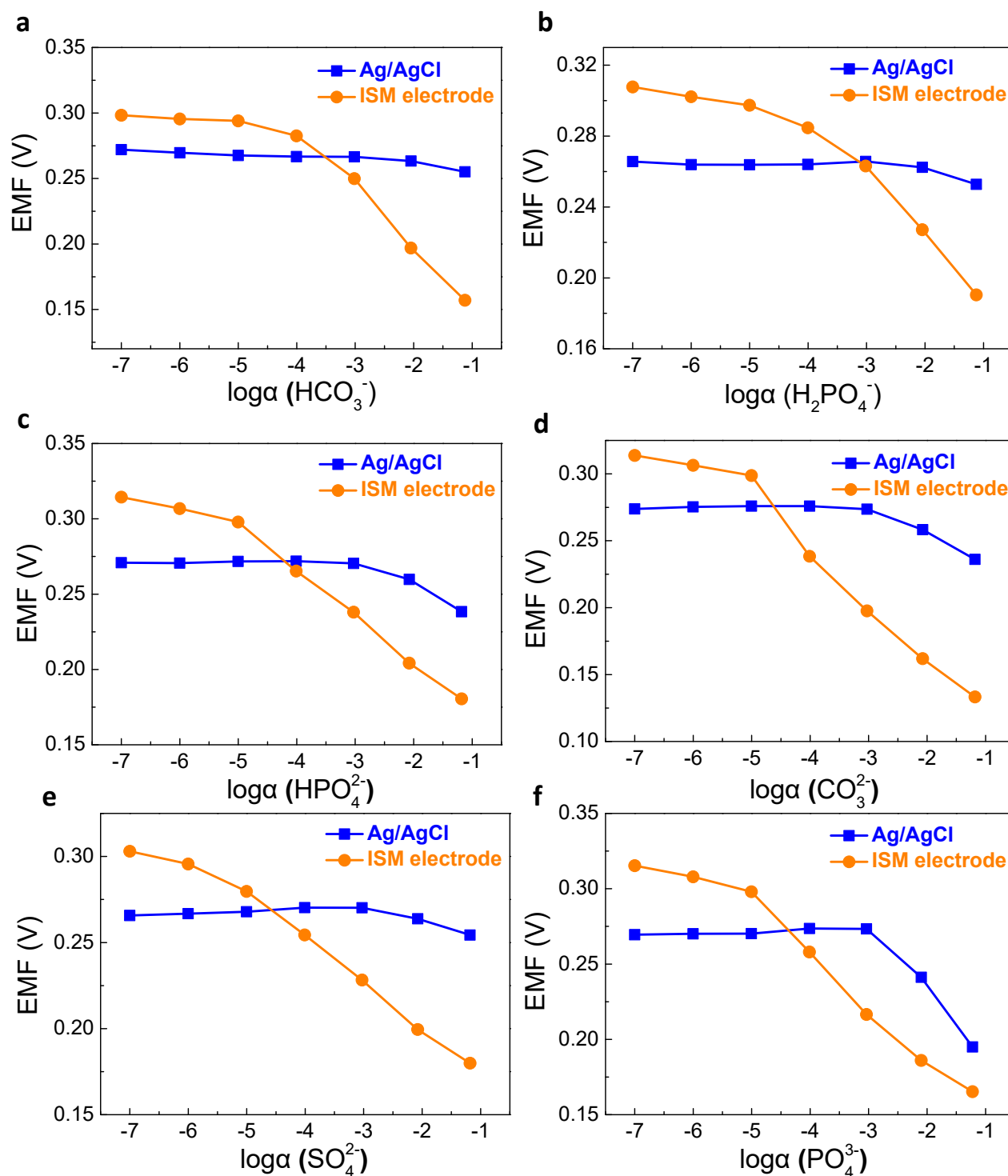
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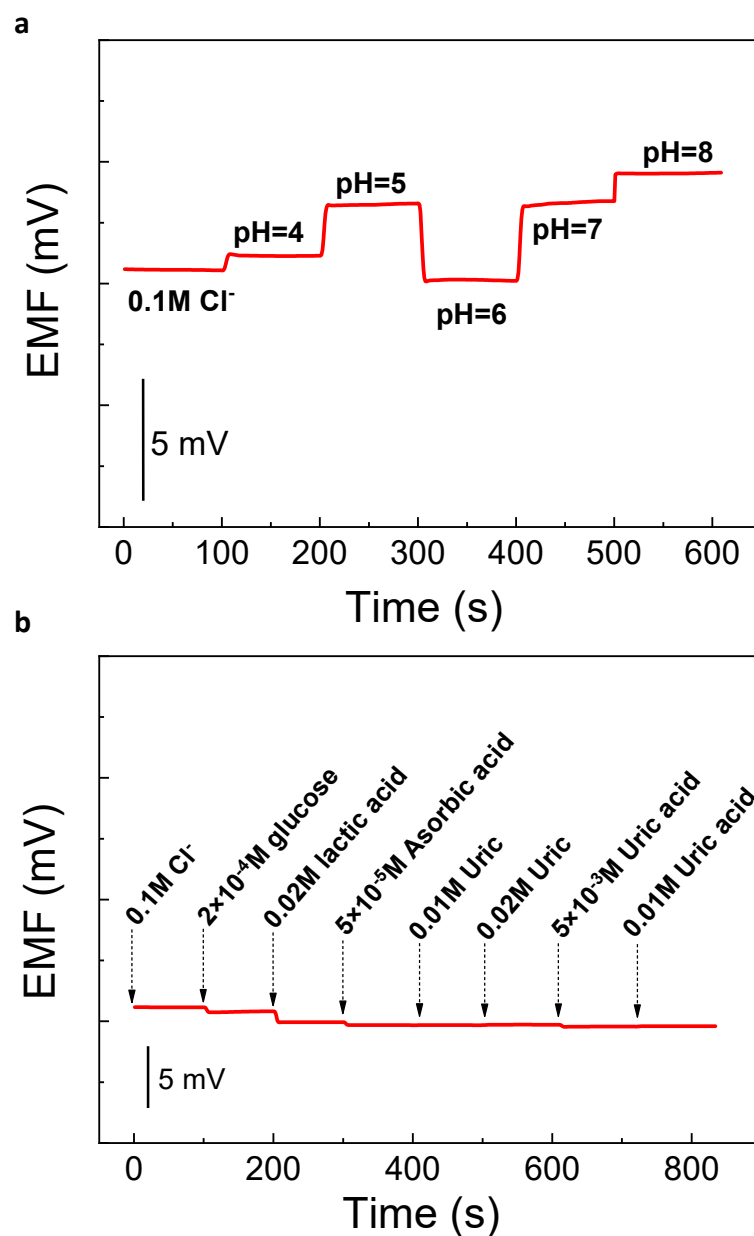
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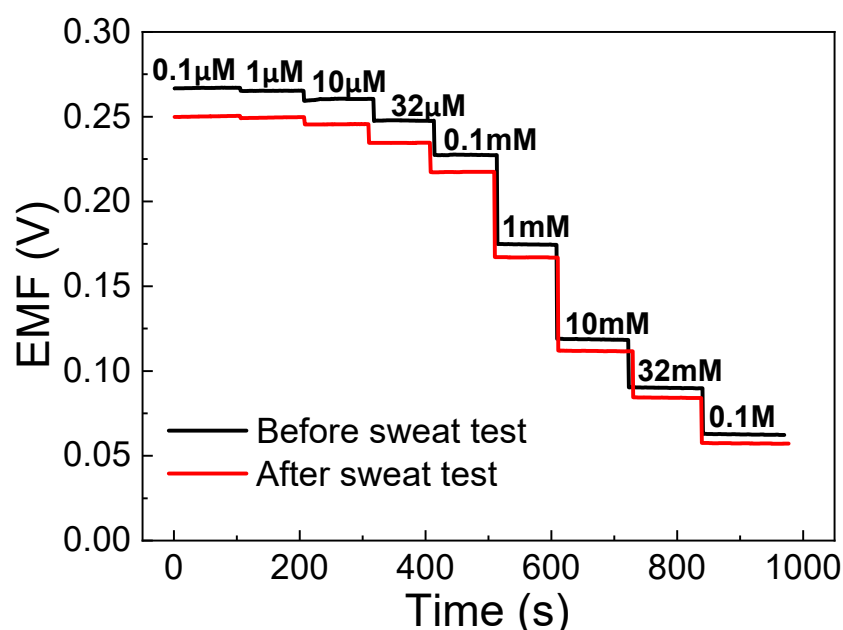
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**Figure S1.** Selectivity coefficient testing of the prepared Cl<sup>−</sup>ISEs: potentiometric responses of the Ag/AgCl electrode (blue line) and the ISM electrode (orange line) in aqueous solution from 0.1  $\mu\text{M}$  to 0.1 M: (a)  $\text{KHCO}_3$ , (b)  $\text{KH}_2\text{PO}_4$ , (c)  $\text{K}_2\text{HPO}_4$ , (d)  $\text{K}_2\text{CO}_3$ , (e)  $\text{K}_2\text{SO}_4$ , and (f)  $\text{K}_3\text{PO}_4$ .



**Figure S2.** pH (a) and metabolite (b) interference tests of the prepared flexible Ag/AgCl electrode.



**Figure S3.** Potential response curves of the flexible Ag/AgCl electrode before (black line) and after (red line) sweat test.

**Table S1.** Comparison of Ag/AgCl-based Cl<sup>-</sup> sensors with previously reported sensors.

| Preparation methods         | Cl <sup>-</sup> range<br>(Log α) | LOD<br>(Log α) | Sensitivity<br>(mV/dec) | Response<br>time | Stability<br>(mV/h) | Ref.      |
|-----------------------------|----------------------------------|----------------|-------------------------|------------------|---------------------|-----------|
| Anodizing                   | -2.7–0.48                        | -              | -59.0 ± 1.0             | -                | -                   | [1]       |
| Coulometric chloridization  | -4.3–1                           | -              | -53.0 ± 1.5             | -                | -                   | [2]       |
| Ag/AgCl paste               | -3–0.48                          | -              | -58                     | -                | -                   | [3,4]     |
| Anodizing                   | -2.7–0.6                         | -              | -59.0 ± 2.0             | -                | -                   | [5]       |
| FeCl <sub>3</sub> oxidation | -3–1                             | -              | -63.0 ± 4.0             | -                | -                   | [6]       |
| FeCl <sub>3</sub> oxidation | -2–1                             | -              | -52.8 ± 0.7             | -                | -                   | [7]       |
| Ag/AgCl conductive ink      | -2–0                             | -3.3           | -51.5 ± 2.9             | 30s              | 0.24                | [8]       |
| Anodizing                   | -3–0                             | --             | -64                     | -                | -                   | [9]       |
| Constant current oxidation  | -4.5–1                           | -4.8           | -57.1 ± 1.2             | 25s              | 0.033               | This work |

**Table S2.** A comparison of Cl<sup>-</sup> sensors between Ag/AgCl and ISM-based SC-ISEs of Cl<sup>-</sup>.

| SC-ISEs of Cl <sup>-</sup> | Cl <sup>-</sup> range<br>(Log α) | LOD<br>(Log α) | Sensitivity<br>(mV/dec) | Response<br>time | Stability<br>(mV/h) | Ref       |
|----------------------------|----------------------------------|----------------|-------------------------|------------------|---------------------|-----------|
| PPy/ISM                    | -4–1                             | -4.7           | -48.4 ± 0.73            | -                | -                   | [10]      |
| PANI/ISM                   | -4–1                             | -4.6           | -58.8 ± 1.3             | -                | -                   | [11]      |
| PEDOT/ISM                  | -3–1                             | -3.9           | -62.7 ± 0.1             | -                | -                   | [12]      |
| POT/ISM                    | -3–1                             | -              | -53.35 ± 0.29           | -                | -                   | [13]      |
| RuO <sub>2</sub> -GO/ISM   | -5–1                             | -              | -44.45                  | -                | -                   | [14]      |
| Ag/AgCl                    | -4.5–1                           | -4.8           | -57.1 ± 1.2             | 25 s             | 0.033               | This work |

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