Supplementary Information

All-solid-state potassium-selective electrode using graphene as the solid contact

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Fig. S1. (A, B) TEM images of the synthesized graphene sheets and (C, D) SEM images of the graphene transducer layer.
Fig. S2. CVs for the GC/graphene electrodes in 0.1 M KCl at different transducing layers. From inner to outer: 0, 3, 11, 20. Potential scan rate: 0.1 V s\(^{-1}\).
Fig. S3. CVs for GC/graphene electrodes (20 layers) (A) and bare GC electrodes (B) in 0.1 M KCl in the presence (red) and absence (black) of oxygen.
Fig. S4. Effect of CO₂ on the potential stability of GC/graphene/K⁺-ISE.
<table>
<thead>
<tr>
<th>Brand of water</th>
<th>The dimension values (M)</th>
<th>Values detected by the electrode (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quanyangquan</td>
<td>2.05\text{-}7.67\times10^{-5}</td>
<td>5.14\pm0.09\times10^{-5}</td>
</tr>
<tr>
<td>Nongfu spring</td>
<td>\geq8.97\times10^{-6}</td>
<td>2.31\pm0.10\times10^{-5}</td>
</tr>
<tr>
<td>Wahaha pure water added 1.0\times10^{-3} M K\textsuperscript{+}</td>
<td>1.0\times10^{-3}</td>
<td>1.03\pm0.07\times10^{-3}</td>
</tr>
</tbody>
</table>

**Table S1.** The detection of K\textsuperscript{+} concentration in drinking water by the GC/graphene/K\textsuperscript{+}-ISE.