Supporting Information

Label-free Fluorescence “Turn-on” Detection of SO$_3^{2-}$ by Gold Nanoclusters: Integration in a Hydrogel Platform and Intracellular Detection

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Fig. S1. Fluorescence response of Au NCs in the absence and presence of different metal ions (50 µM) in aqueous solution.

Fig. S2. UV-vis absorption spectra of Au NC (black), Au NC-Cu$^{2+}$ (blue) and Au NC-Cu$^{2+}$-SO$_3^{2-}$ (red).
Fig. S3. Fluorescence spectra of (a) Au NCs following addition of (b) 100 µM SO$_3^{2-}$, (c) Mixture of 50 µM Cu$^{2+}$ and 100 µM SO$_3^{2-}$, (d) 50 µM Cu$^{2+}$ and (e) water addition (instead of SO$_3^{2-}$ solution) to Cu$^{2+}$ added Au NCs.

Fig. S4. Zeta potential measurements of the samples.
Table S1. Determination of SO$_3^{2-}$ in human urine samples.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Added (µM)</th>
<th>Detected (µM)</th>
<th>Recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>21.4 ± 0.70</td>
<td>107</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>48.9 ± 1.08</td>
<td>97.8</td>
</tr>
<tr>
<td>3</td>
<td>80</td>
<td>77.2 ± 2.79</td>
<td>96.5</td>
</tr>
<tr>
<td>4</td>
<td>110</td>
<td>108.4 ± 1.26</td>
<td>98.5</td>
</tr>
</tbody>
</table>

$^1$ Mean ± standard deviation for three replicate measurements.

Fig. S5. FTIR spectra for the hydrogels: (a) bare hydrogel (black), (b) bare hydrogel cross-linked with EDC (red) and (c) hydrogel cross-linked with EDC containing Au NC (blue).