Supplementary Information

**Interpenetrating Porous Photonic Crystal Balls for Rapid Naked Eye Detection of Uranyl Ions**

Bing Liu, Letian Li, Wenzhao Liu, Qianshan Chen, Zhaoyang Wu*

State Key Laboratory of Chemo/Bio-sensing and Chemo-metrics, College of Chemistry and Chemical Engineering, Hunan University, Changsha 410082, People’s Republic of China

* Corresponding author. E-mail: zywuhnu.edu.cn

**Figure S1.** Schematic diagram of the preparation of photonic crystal balls templates via T-shaped microfluidic device.
Figure S2. SEM images of photonic crystal balls template at different magnifications.
Figure S3. The corresponding reflectance spectrum of PCBs, hydrogel/PCBs and IPPCBs.

Figure S4. The effect of pH on the performance of IPPCBs in response to UO$_2^{2+}$. (The concentration of UO$_2^{2+}$ used in the experiment is 0.1 μM)
Figure S5. Optimization of reaction time of IPPCBs in response to UO$_2^{2+}$. (The concentration of UO$_2^{2+}$ used in the experiment is 0.1 μM)

Table S1. Comparison of different photonic crystal sensors for uranyl ion analysis.

<table>
<thead>
<tr>
<th>Responsive group</th>
<th>Angle dependency</th>
<th>Sensor size</th>
<th>Linear range</th>
<th>Responding speed</th>
<th>Refs</th>
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<tbody>
<tr>
<td>Carboxy and amidoxime</td>
<td>None</td>
<td>Micron scale</td>
<td>1nM-0.1μM</td>
<td>12 min</td>
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<tr>
<td>Carboxy</td>
<td>Yes</td>
<td>Centimeter scale</td>
<td>Not given</td>
<td>1 h</td>
<td>Ref.1</td>
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<tr>
<td>Carboxy and amidoxime</td>
<td>Yes</td>
<td>Centimeter scale</td>
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<td>1 h</td>
<td>Ref.2</td>
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<td>Amidoxime</td>
<td>Yes</td>
<td>Centimeter scale</td>
<td>1nM-100μM</td>
<td>40 min</td>
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References

