Supporting information

Barbituric acid-modified graphitic carbon nitride nanosheets for ratiometric fluorescent detection of Cu$^{2+}$

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Figure S1. AFM image of BCN nanosheets (A) and corresponding height image (B).
**Figure S2.** Fluorescence spectra of BCN nanosheets (0.161 mg/mL) with different excitation wavelength
Figure S3. The UV-Vis spectra of BCN nanosheets (0.187 mg/mL) solutions before and after addition of Cu$^{2+}$. 
Figure S4. The decay curves of BCN nanosheets (0.187 mg/mL) in the absence and presence of 10 μM Cu^{2+}. The decay curves were recorded at the maximal emission peak (488 nm) with the excitation wavelength of 325 nm.
Table S1. Fluorescence lifetime parameters of BCN nanosheets (0.187 mg/mL) in the absence and presence of 10 μM Cu$^{2+}$

<table>
<thead>
<tr>
<th></th>
<th>$\tau_1$/ns</th>
<th>Rel%</th>
<th>$\tau_2$/ns</th>
<th>Rel%</th>
<th>$\tau_3$/ns</th>
<th>Rel%</th>
<th>$\chi^2$</th>
<th>$\tau_{\text{average}}$/ns</th>
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<td>BCN nanosheets</td>
<td>0.94</td>
<td>30.63</td>
<td>3.30</td>
<td>44.15</td>
<td>10.10</td>
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<td>BCN nanosheets and Cu$^{2+}$</td>
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<td>50.87</td>
<td>3.46</td>
<td>32.22</td>
<td>8.52</td>
<td>16.91</td>
<td>1.12</td>
<td>3.04</td>
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**Figure S5.** Emission spectra of Ru(bpy)$_3$Cl$_2$ (4.025 μg/mL) on adding of different concentration of Cu$^{2+}$.
Figure S6. Effect of pH on the ratio of fluorescence quenching of BCN nanosheets
(BCN nanosheets: 0.187 mg/mL; Cu$^{2+}$: 10 μM)
Figure S7. Effect of incubation time on the ratio of fluorescence quenching of BCN nanosheets (BCN nanosheets: 0.187 mg/mL; Cu$^{2+}$: 10 μM)
Figure S8. Effect of temperature on the ratio of fluorescence quenching of BCN nanosheets (BCN nanosheets: 0.187 mg/mL; Cu$^{2+}$: 10 μM)
Figure S9. The ratio of fluorescence intensity (F$_{488}$/F$_{612}$) of the probe on addition of different cations and anions (all ions were 10 μM).