Supplementary information

Hydrothermal construction of $\text{WO}_3\cdot 0.33\text{H}_2\text{O}/\text{g-C}_3\text{N}_4$ nanocomposites
with enhanced adsorption and photocatalytic activity

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**Fig. S1** TG curves of WO$_{3.0.33}$H$_2$O, g-C$_3$N$_4$ and WG-4 nanocomposite.

**Fig. S2** Adsorption and photocatalytic degradation of RhB (a), plot of $-\ln(C/C_0)$ versus time $t$ and $k$ values (b) of WO$_{3.0.33}$H$_2$O, g-C$_3$N$_4$ and WG-4.

**Fig. S3** Adsorption rate of MO (25 mg/L) by WG-4 nanocomposite.
Fig. S4 PL spectra of WO$_{3.033}$H$_2$O, g-C$_3$N$_4$-H and WO$_{3.033}$H$_2$O/g-C$_3$N$_4$ nanocomposites.

Fig. S5 XPS valence band edge spectra of WO$_{3.033}$H$_2$O and g-C$_3$N$_4$.

**Table S1** Specific surface area, pore volume, zeta potential and TRPL lifetime values of WO$_{3.033}$H$_2$O, g-C$_3$N$_4$ and WG-4 nanocomposite.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Specific surface areas/m$^2$ g$^{-1}$</th>
<th>Pore volume/cm$^3$ g$^{-1}$</th>
<th>Zeta potential/mV</th>
<th>$\tau_1$/ns</th>
<th>$\tau_2$/ns</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO$_{3.033}$H$_2$O</td>
<td>2.50</td>
<td>0.01</td>
<td>-46.6</td>
<td>1.51</td>
<td>9.17</td>
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<tr>
<td>g-C$_3$N$_4$</td>
<td>31.65</td>
<td>0.20</td>
<td>-14.0</td>
<td>1.83</td>
<td>7.91</td>
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<td>WG-4</td>
<td>73.69</td>
<td>0.40</td>
<td>-40.4</td>
<td>7.87</td>
<td>2.24</td>
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