Supplementary Material

Enhanced Visible-Light-Driven Photocatalysis from WS$_2$ Quantum Dots Coupled to BiOCl nanosheets: Synergistic effect and mechanism insight

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Fig. S1. Raman spectra of the BiOCl and WS$_2$/BiOCl-2.

Fig. S2. XPS survey of the BiOCl and WS$_2$/BiOCl-2.
**Fig. S3.** (a) low magnification and (b) high magnification SEM images of the BiOCl.

**Fig. S4.** TEM image of the WS$_2$ QDs.
Fig. S5. (a) UV–Vis absorption spectrum and (b) PL emission spectrum (Ex = 380 nm) of the WS$_2$ quantum dots.

Fig. S6. Time dependent TOC removal percentage of photocatalytic degradation of RhB by the WS$_2$/BiOCl-2 (initial RhB concentration = 30 mg/L, dosage of catalysts = 0.2 g/L);
Fig. S7. (a) Photocatalytic degradation of Congo red (CR) by the BiOCl and WS$_2$/BiOCl-2 (initial CR concentration = 40 mg/L, dosage of catalysts = 0.2 g/L).

Fig.S8. XRD patterns of the WS$_2$/BiOCl-2 before and after cyclic degradation experiments.
**Fig. S9.** TEM image of the WS₂/BiOCl-2 after cyclic degradation experiments.

**Fig. S10.** Valence band XPS spectra of the (a) BiOCl and (b) WS₂/BiOCl.
<table>
<thead>
<tr>
<th></th>
<th>WS$_2$/BiOCl-1</th>
<th>WS$_2$/BiOCl-2</th>
<th>WS$_2$/BiOCl-3</th>
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</thead>
<tbody>
<tr>
<td>W concentration (mg/L)</td>
<td>1.35</td>
<td>2.84</td>
<td>4.20</td>
</tr>
<tr>
<td>W % (mg/g)</td>
<td>13.5</td>
<td>28.4</td>
<td>42.0</td>
</tr>
<tr>
<td>WS$_2$% (wt%)</td>
<td>1.82</td>
<td>3.83</td>
<td>5.66</td>
</tr>
</tbody>
</table>

The samples for ICP analysis were prepared by dissolve 10 mg of the WS$_2$/BiOCl in aqua regia and diluted to 100 mL.