Band gap engineering of BiOI via Oxygen Vacancy induced by graphene for improved photocatalysis

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Figure S1: Adsorption curves of MO by BiOI and rGO-BiOI nanocomposites samples.

Figure S2: The mineralization rate of rGO1/400-BiOI for MO
Figure S3: (a) Zero-order kinetics (b) second-order kinetics of degradation for MO over BiOI and rGO-BiOI.

Table S1. Fitted results of MO degradation over BiOI an rGO-BiOI

<table>
<thead>
<tr>
<th>catalysts</th>
<th>BiOI</th>
<th>rGO_{1/200}-BiOI</th>
<th>rGO_{1/400}-BiOI</th>
<th>rGO_{1/600}-BiOI</th>
<th>rGO_{1/800}-BiOI</th>
<th>rGO_{1/1000}-BiOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero order R²</td>
<td>0.984</td>
<td>0.959</td>
<td>0.916</td>
<td>0.975</td>
<td>0.963</td>
<td>0.997</td>
</tr>
<tr>
<td>slope (k₀)</td>
<td>0.003</td>
<td>0.008</td>
<td>0.013</td>
<td>0.013</td>
<td>0.012</td>
<td>0.012</td>
</tr>
<tr>
<td>standard error</td>
<td>0.0001</td>
<td>0.0006</td>
<td>0.0017</td>
<td>0.0008</td>
<td>0.0010</td>
<td>0.0003</td>
</tr>
<tr>
<td>first order R²</td>
<td>0.981</td>
<td>0.991</td>
<td>0.974</td>
<td>0.992</td>
<td>0.927</td>
<td>0.963</td>
</tr>
<tr>
<td>slope (k₁)</td>
<td>0.002</td>
<td>0.007</td>
<td>0.026</td>
<td>0.015</td>
<td>0.016</td>
<td>0.012</td>
</tr>
<tr>
<td>standard error</td>
<td>0.0001</td>
<td>0.0003</td>
<td>0.0017</td>
<td>0.0006</td>
<td>0.0018</td>
<td>0.0010</td>
</tr>
<tr>
<td>second order R²</td>
<td>0.974</td>
<td>0.976</td>
<td>0.583</td>
<td>0.718</td>
<td>0.694</td>
<td>0.829</td>
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<tr>
<td>slope (k₂)</td>
<td>0.001</td>
<td>0.006</td>
<td>0.090</td>
<td>0.028</td>
<td>0.026</td>
<td>0.015</td>
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<tr>
<td>standard error</td>
<td>0.00009</td>
<td>0.0003</td>
<td>0.0295</td>
<td>0.0070</td>
<td>0.0067</td>
<td>0.0027</td>
</tr>
</tbody>
</table>

(K₀=mg/L min, K₁=min⁻¹, K₂=L/mg min)

Figure S4: Cycling experiment for degrading MO over rGO_{1/400}-BiOI
Figure S5: Photocatalytic activities of phenol over BiOI, rGO$_{1/400}$-BiOI and rGO$_{1/600}$-BiOI under visible light irradiation.

Figure S6: XRD patterns of rGO$_{1/400}$-BiOI before and after photoreaction.

Figure S7: Reactive species trapping experiments on the photocatalytic degradation of MO over pure BiOI.