Efficient C₃N₄/graphene oxide aerogel macroscopic visible-light photocatalyst

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Supplementary Methods

Measurement of the specific surface area.

The specific surface area was determined through the MB adsorption method by UV-vis spectroscopy (Shimadzu UV-2600). The SSA of the sample was calculated using the following equation:

\[
SSA = \frac{N_A A_{MB} (C_0 - C_e)V}{M_{MB} m_s}
\]

where \(N_A\) is Avogadro number \((6.02 \times 10^{23} \text{ mol}^{-1})\), \(A_{MB}\) is the covered area of per \(M_B\) molecule (typically assumed to be \(1.35 \text{ nm}^2\)), \(C_0\) and \(C_e\) are the initial and equilibrium concentrations of MB, respectively, \(V\) is the volume of MB solution, \(M_{MB}\) is the relative molecular mass of \(M_B\), and \(m_s\) is the mass of the sample.
Supplementary Figures

**Figure S1.** The mechanical property of the monolithic C₃N₄/GOA and GOA.

**Figure S2.** The O1s XPS peak of C₃N₄/GOA.
Figure S3. The schematic of NO removal device: (a) the reactor, (b) the NO detector, (c) The C$_3$N$_4$/GOA sample in the petri dish for experiment, (d) the sample being taken up and (e) the powdery C$_3$N$_4$ in the petri dish.

Figure S4. Nitrogen adsorption/desorption isotherm of the powdery C$_3$N$_4$ and C$_3$N$_4$/GOA with 90wt% of C$_3$N$_4$ (inset: pore volume of the corresponding samples).
Figure S5. SEM image of C$_3$N$_4$/GOA after photocatalytic oxidation of NO

Figure S6. The adsorption and photodegradation for RhB over C$_3$N$_4$/GOA under visible light irradiation
Figure S7. The adsorption for methylene blue (MB) over GO, C₃N₄/GOA and powdery C₃N₄.

Figure S8. Photographs of BN/GOA and MoS₂/GOA.
### Supplementary Tables

**Table S1.** The modeling of R-C values of C$_3$N$_4$ and C$_3$N$_4$/GOA

<table>
<thead>
<tr>
<th></th>
<th>C$_3$N$_4$-dark</th>
<th>C$_3$N$_4$-light</th>
<th>C$_3$N$_4$/GOA-dark</th>
<th>C$_3$N$_4$/GOA-light</th>
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<tbody>
<tr>
<td>Ro (Ω cm$^2$)</td>
<td>4.031</td>
<td>4.248</td>
<td>3</td>
<td>3.084</td>
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<tr>
<td>Co (F cm$^2$)</td>
<td>8.2767E-08</td>
<td>8.0658E-08</td>
<td>2.1169E-07</td>
<td>1.7985E-07</td>
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<tr>
<td>Wo -P</td>
<td>0.23616</td>
<td>0.29589</td>
<td>0.39644</td>
<td>0.32383</td>
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<tr>
<td>Rs (Ω cm$^2$)</td>
<td>16.13</td>
<td>16.07</td>
<td>17</td>
<td>16.72</td>
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<tr>
<td>R$_1$ (Ω cm$^2$)</td>
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<td>1524</td>
<td>27.3</td>
<td>21.72</td>
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<tr>
<td>CPE1-P</td>
<td>0.92892</td>
<td>0.94455</td>
<td>0.48976</td>
<td>0.50376</td>
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<td>CPE1-T (S cm$^2$ S$^p$)</td>
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<td>R$_2$ (Ω cm$^2$)</td>
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<td>806.4</td>
<td>924.8</td>
<td>514.8</td>
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<td>C$_2$ (F cm$^2$)</td>
<td>0.00018709</td>
<td>0.00096299</td>
<td>0.012702</td>
<td>0.011492</td>
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</table>

**Ro:** the resistance of Pt electrode;  
**R$_1$:** the resistance of work electrode, CPE1-P and CPE1-T: the deviation of constant phase angle;  
**Rs:** the resistance of the solution;  
**R$_2$:** the resistance of the reaction;
Supplementary References