Support Information

Bimental composites for photocatalytic reduction of CO2 to CO in the near-infrared region by SPR effect

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Figure S1. XRD of different proportions of CuNi/C-550(a). SEM CuNi/C-300(b).
Figure S2. XRD of C(a). FTIR patterns of C(b). TEM of C(c,d).

Figure S3. SEM of Cu_{0.66}Ni_{0.33}BTC(a), Cu_{0.75}Ni_{0.25}BTC(b), Cu_{0.33}Ni_{0.66}BTC(c), Cu_{0.25}Ni_{0.75}BTC(d).
Figure S4. SEM of CuNi/C-450

Figure S5. SEM of CuNi/C-550
Figure S6. SEM of CuNi/C-550

Figure S7. SEM of CuNi/C-650
Figure S8. SEM of CuNi/C-750.

Figure S9. EDS of Cu/C-550.

Figure S10. EDS of Ni/C-550.
Figure S11. EDS of CuNi/C-450.

Figure S12. EDS of CuNi/C-650
Figure S13. EDS of CuNi/C-750

Figure S14. XPS of CuNi/C-450
Figure S15. XPS of CuNi/C-650

Figure S16. Sample adsorption and desorption capacity for N\textsubscript{2} (a)Cu/C-550. (b)CuNi/C-450. (c)CuNi/C-550. (d)CuNi/C-650.
Figure S17. Pore size distribution (a) CuNi/C-450. (b) CuNi/C-550. (c) CuNi/C-650. (d) Cu/C-550. (e) Ni/C-550. (f) Sample adsorption and desorption capacity for N2.

Figure S18. Electrical properties: photocurrent response of the samples.
Table S1. Gas precipitation under full light (without filter) under different conditions. (The catalyst added in all reactions is CuNi/C-550.)

<table>
<thead>
<tr>
<th>Test Conditions</th>
<th>CO precipitation rate (μmol·g⁻¹h⁻¹)</th>
<th>CH₄ precipitation rate (μmol·g⁻¹h⁻¹)</th>
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<tbody>
<tr>
<td>Without TEOA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Without CO₂</td>
<td>0.012</td>
<td>0</td>
</tr>
<tr>
<td>Dark conditions</td>
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<td>0</td>
</tr>
<tr>
<td>Without catalyst</td>
<td>0</td>
<td>0</td>
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