Supplementary Material

Semiconductor-Metal-Semiconductor TiO2@Au/g-C3N4 interfacial Heterojunction for High Performance Z-Scheme Photocatalyst

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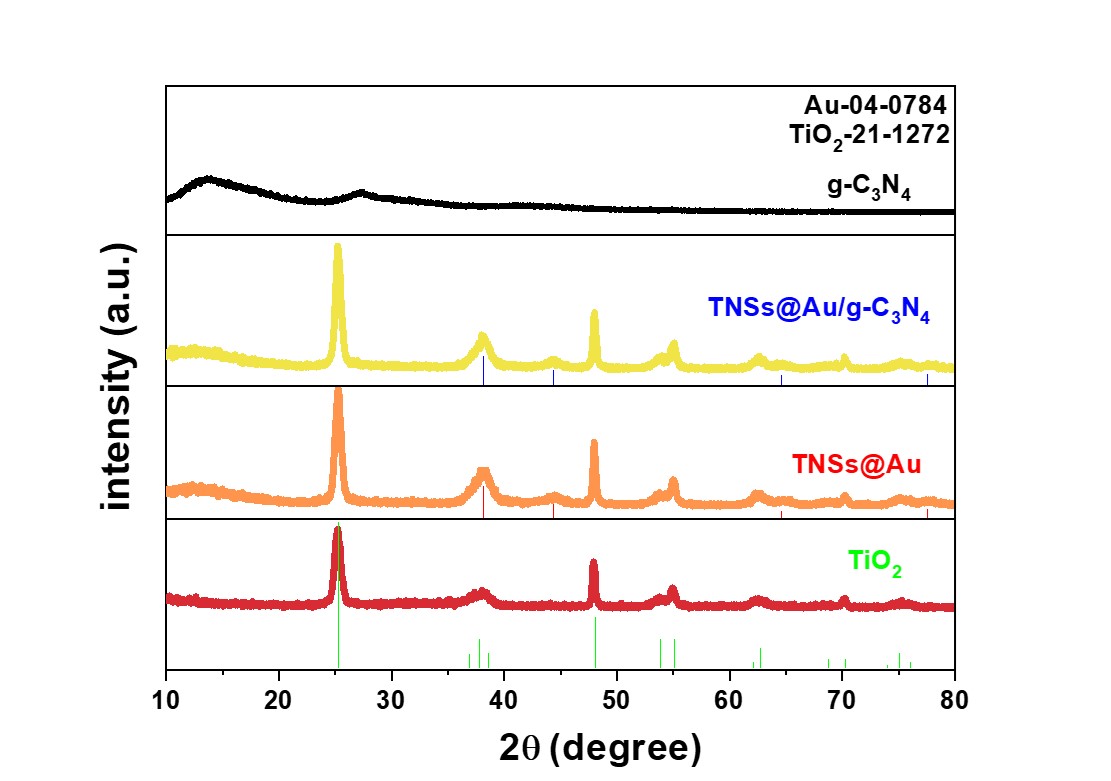
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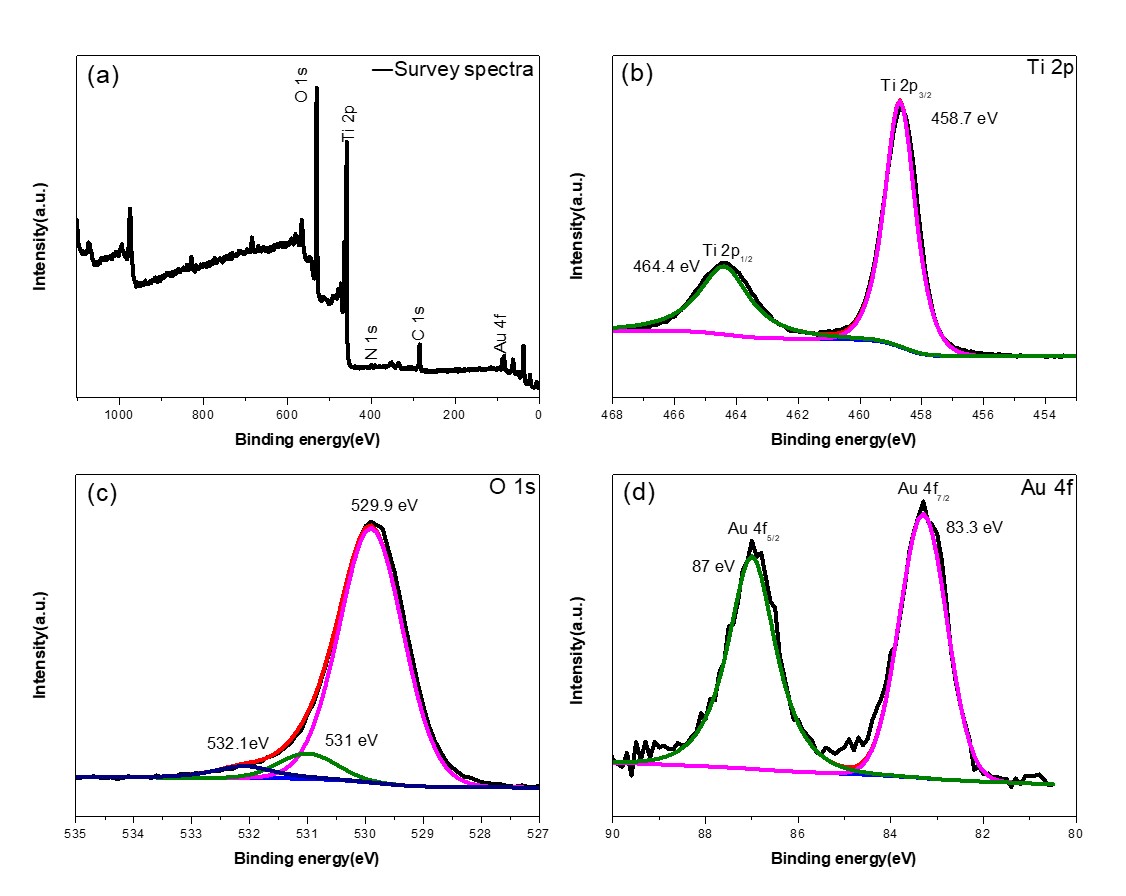
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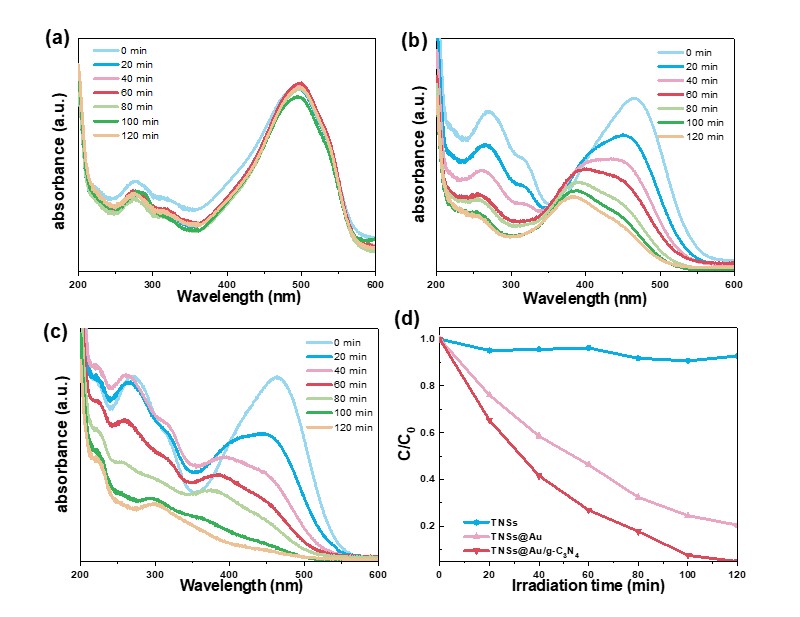
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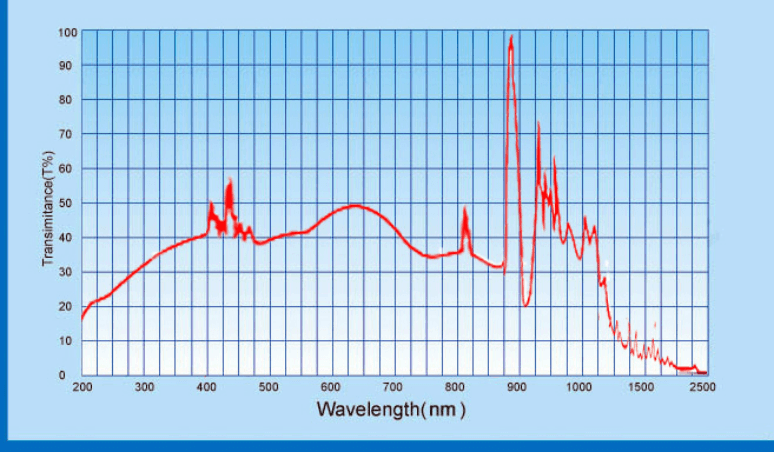
**Figure S1.** XRD patterns of the prepared samples.



**Figure S2.** High-resolution XPS spectra of as-prepared TNSs@Au photocatalyst: (a) full scan survey, (b) Ti 2p, (c) O 1s, (d) Au 4f.



**Figure S3.** Absorption spectral degradation of MO aqueous solution in the presence of (a) TiO2, (b) TNSs@Au, and (c) TNSs@Au/g-C3N4 as a function of irradiation time (under visible light); (d) Comparison of MO photocatalytic degradation.



**Figure S4**. The spectrum obtained from the datasheet of Xenon light source (150 W) used.

**Table S1:**

Comparison of the as-obtained photocatalyst for the RhB & MO dye photo-degradation (%) with earlier reported photocatalysts.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Catalysts | Light source | Dosage | Degradation target | Irradiation time (min) | Degradation (%) | Ref. |
| g-C3N4(Ag)/Gr/TiO2 | Xenon (λ ≥ 400 nm) | 100 mg | RhB | 120 | 99.7 | [1] |
| g-C3N4/TiO2/CuO | 500 W Xenon | 50 mg | RhB | 120 | 90.3 | [2] |
| Ag-TiO2/PP | Xenon | 50 mg | MO | 180 | 81.4 | [3] |
| TiO2/g-C3N4 | 400 W (UV-cut off) | 50 mg | RhB | 90 | 93 | [4] |
| TiO2/g-C3N4 | 300 W Xenon | 50 mg | RhB | 60 | 95 | [5] |
| TiO2/g-C3N4 | 300 W Xenon | 50 mg | MO | 60 | 66 | [5] |
| TiO2@g-C3N4/Co3O4 | Xenon  (300 W) | 50 mg | MO | 60 | 97.8 | [6] |
| g-C3N4/Ag-TiO2 | 500 W Xenon (λ ≥ 420nm) | 50 mg | RhB | 105 | 92.7 | [7] |
| TiO2/Au/g-C3N4 | 280W Xenon lamp (λ ≥ 420nm) | 50 mg | RhB | 60 | 99.4 | This work |
| TiO2/Au/g-C3N4 | 280xenon lamp (λ ≥ 420nm) | 50 mg | MO | 120 | 95 | This work |

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