Supporting Information

In situ chemical reduction of Ta_3N_5 quantum dots coupled TaON hollow spheres heterojunction photocatalyst for water oxidation

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Additional Results

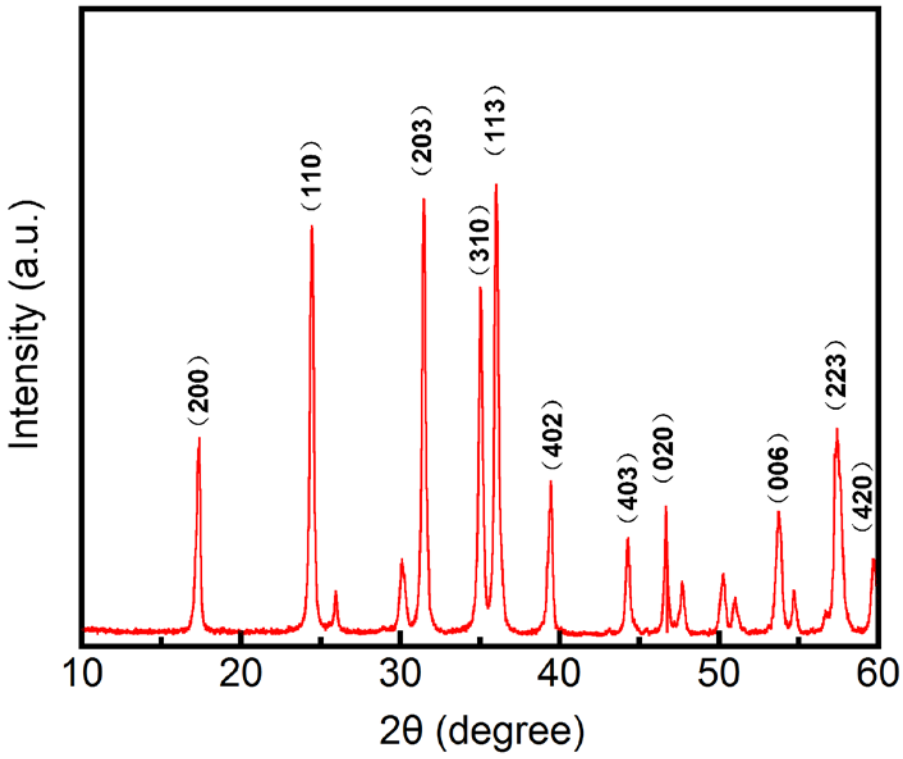

Fig. S1. XRD of Ta_3N_5 from the chemical reduction method.

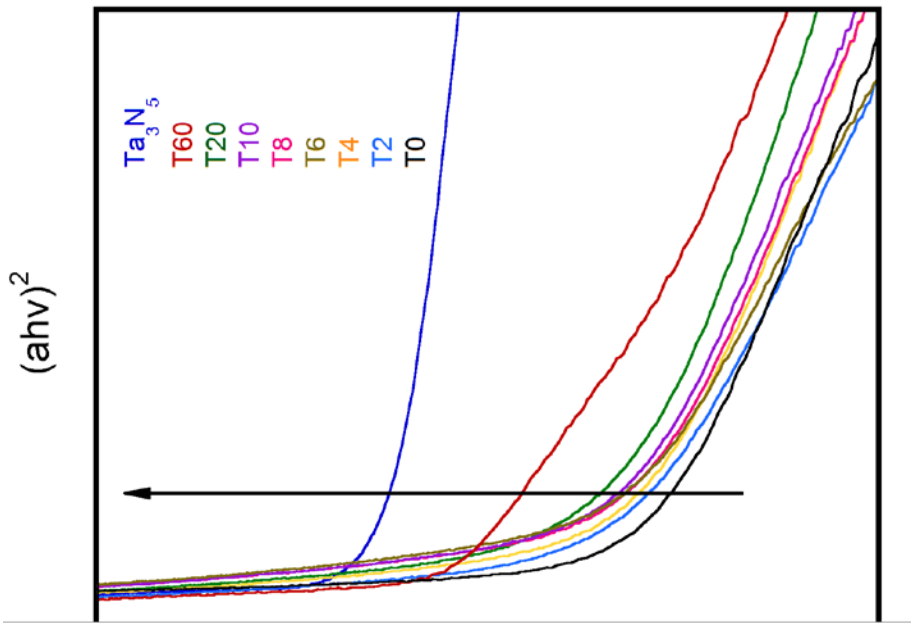

Fig. S2. UV-vis diffuse reflectance spectra of Ta_3N_5 and Ta_3N_5/TaON composite photocatalysts.

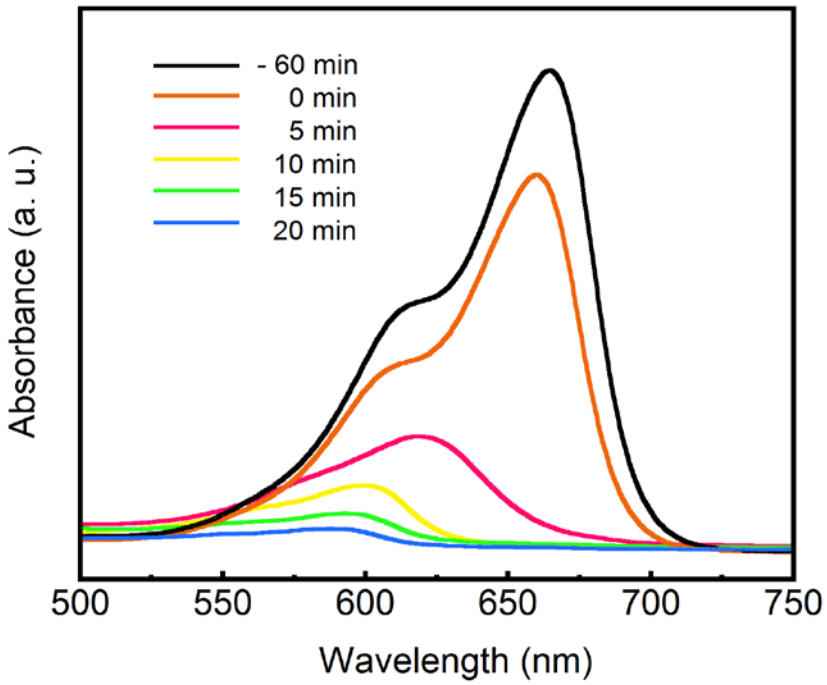

Fig. S3. Absorption spectra of methylene blue solution at different time after irradiating with simulated solar light and using T4 particles as the photocatalyst.

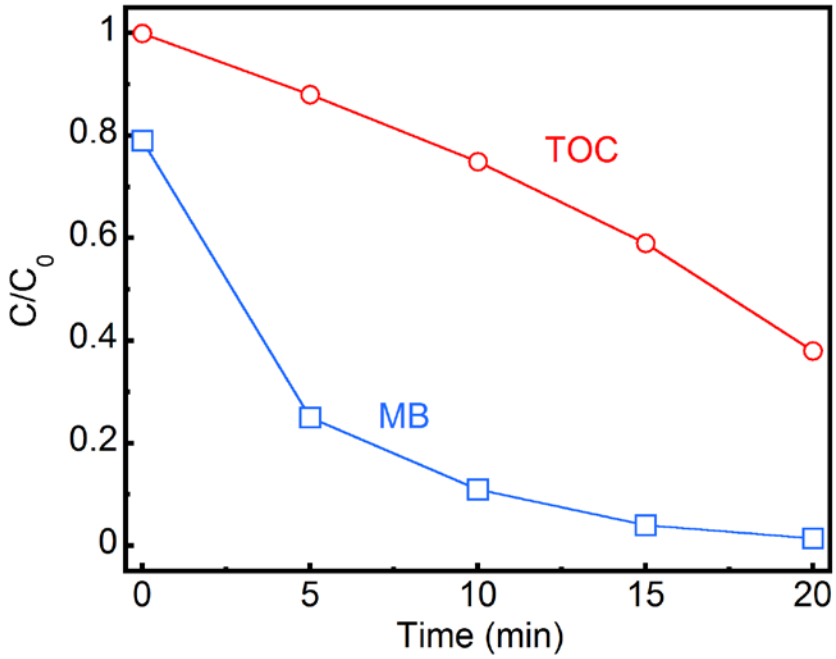

Fig. S4. Changes in the MB concentration and the decrease of TOC over T4 under visible-light irradiation.

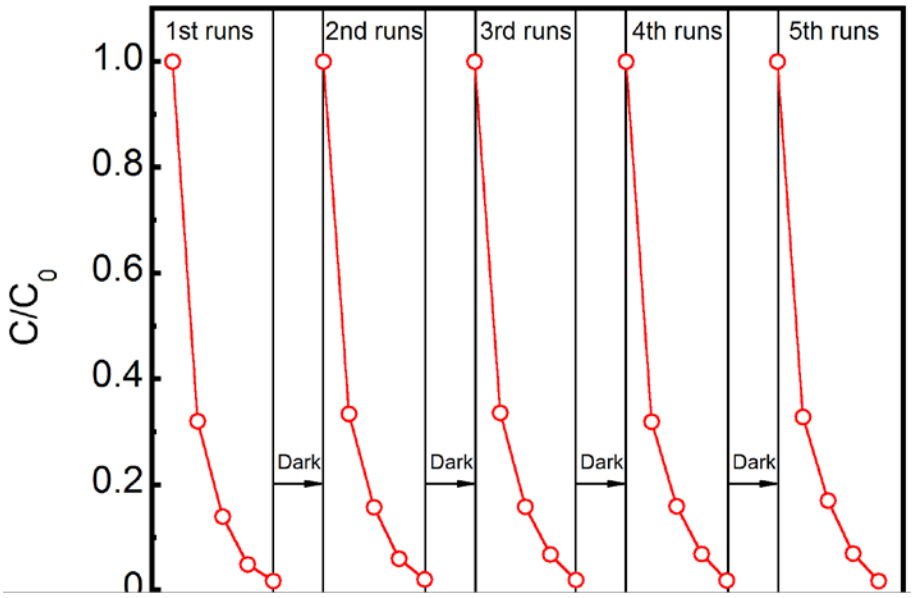

Fig. S5. Cycling runs in the photocatalytic degradation of MB in the presence of T4

The results of cycling tests of the photo catalytic activity of T4 heterojunction in decomposing methylene blue are shown in Figure S5. The heterojunction did not exhibit any reduction of its photocatalytic activity under light irradiation after five photocatalysis cycles. These results indicate that the heterojunction catalyst is a stable visible light driven photocatalyst.

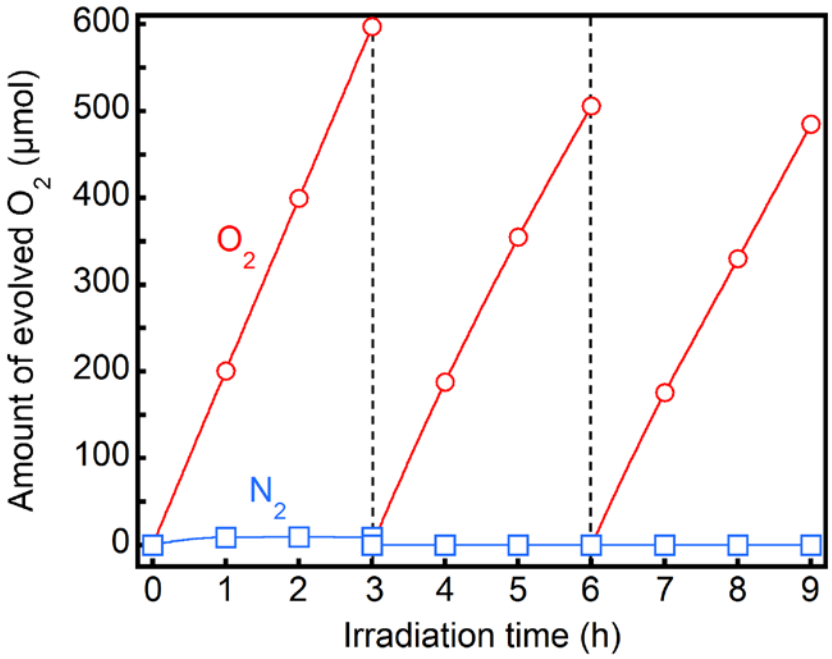

Fig. S6. Cycling measurements of oxygen gas generation through direct photocatalytic water splitting with T4 heterojunction under visible-light (λ = 420 nm).

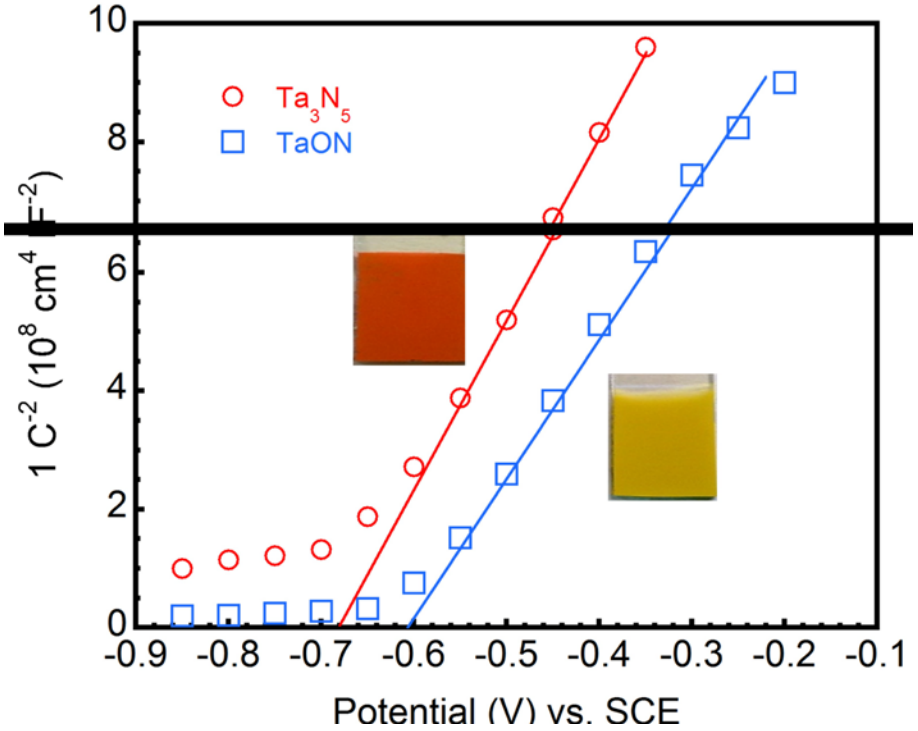

Fig. S7. Mott-Schottky plots for nano Ta_3N_5 and TaON in 0.5 M Na_2SO_4, the ac amplitude is 10mV and the frequency is 1000Hz.

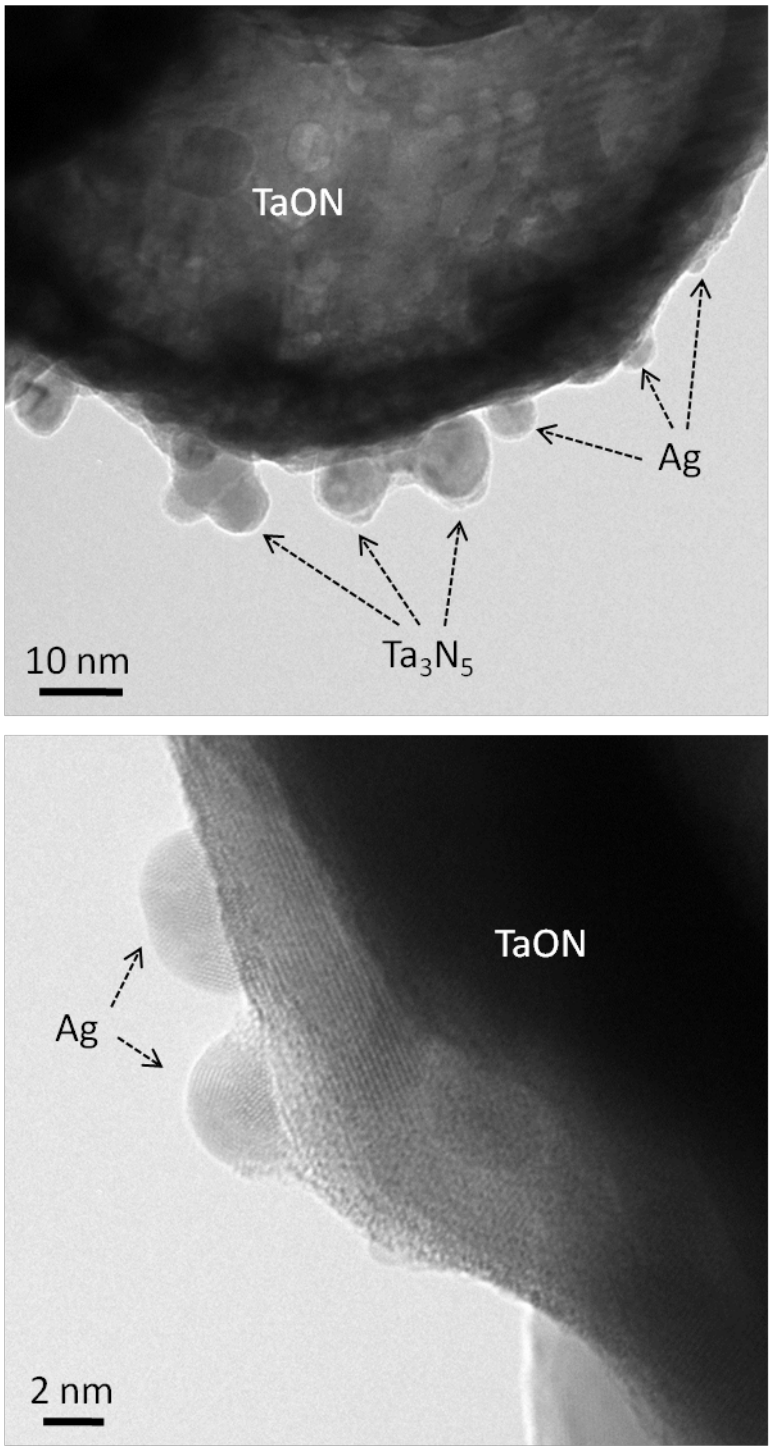

Figure S8. TEM image of heterojunction photocatalyst after irradiation and TEM image of Ag particles.