

Supporting Information

Defect Self-doped TiO₂ for Visible Light Activity and Direct Noble Metal Anchoring

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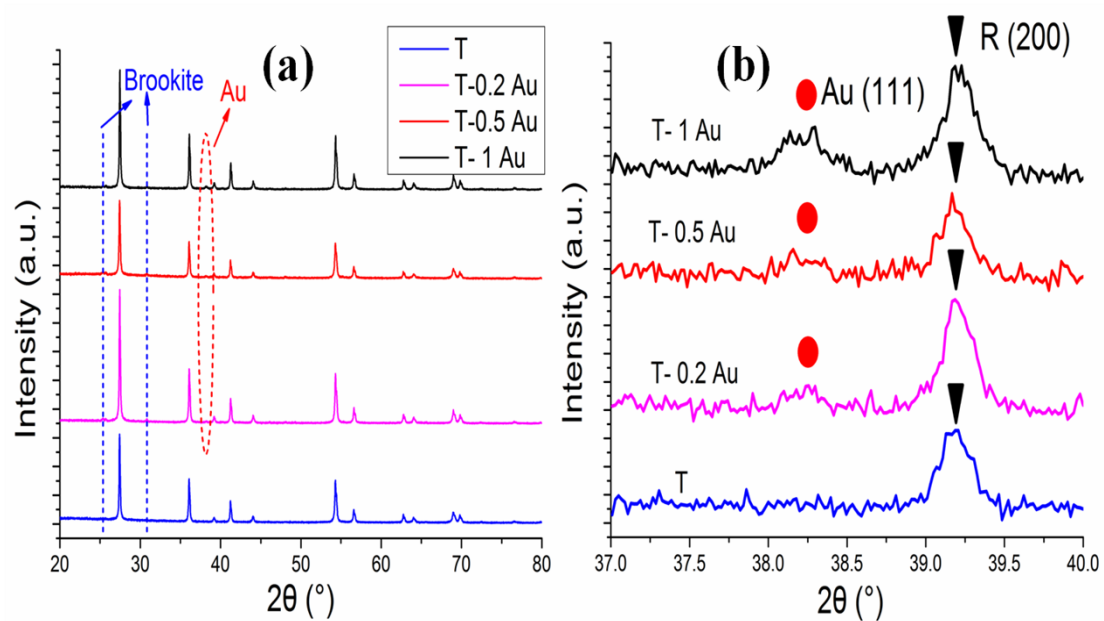


Figure S1 (a) XRD patterns of all samples; (b) Magnified XRD part showing the Au diffraction patterns.

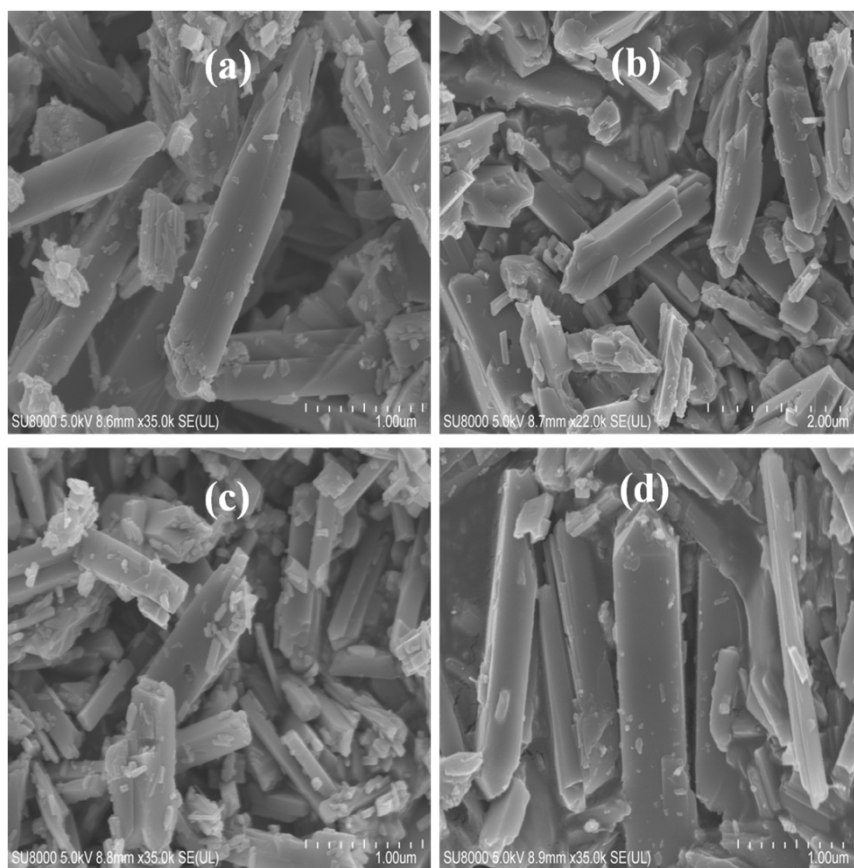


Figure S2 SEM images of different samples, (a) T; (b) T- 0.2Au; (c) T- 0.5 Au; (d) T- 1 Au.

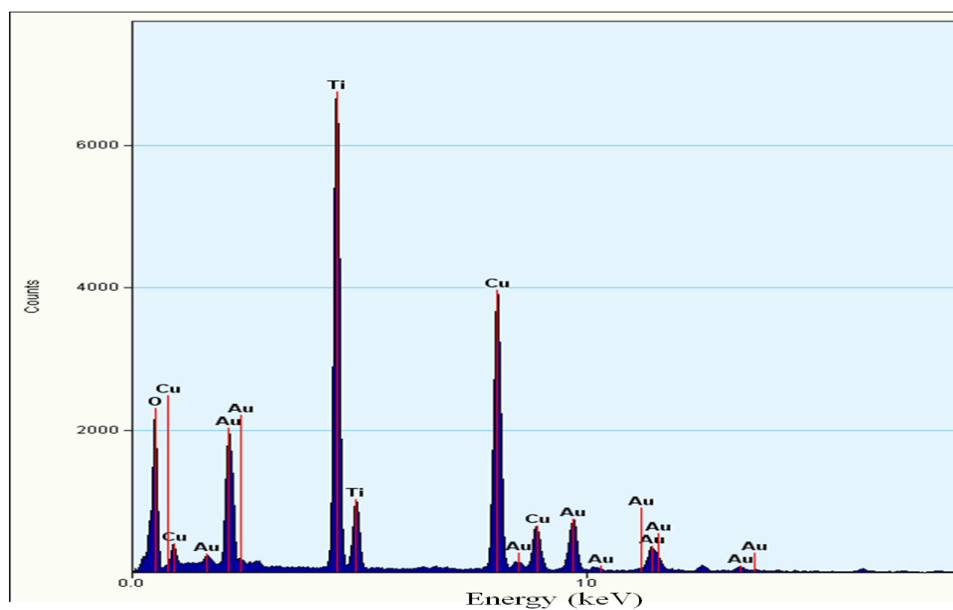


Figure S3 EDS spectrum of T-1 Au sample.

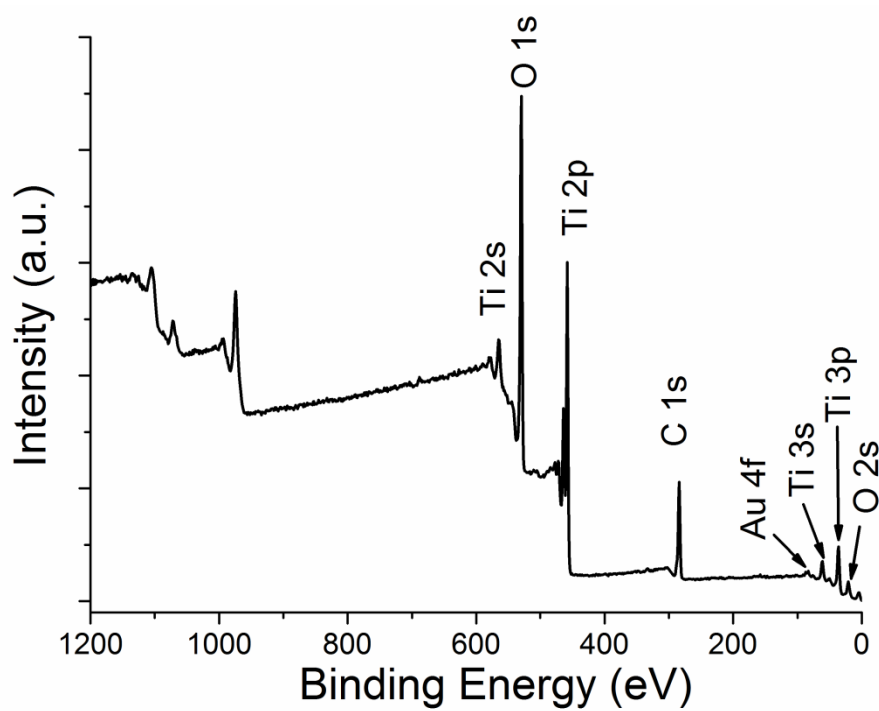


Figure S4. XPS survey spectrum of the representative T-1Au sample.

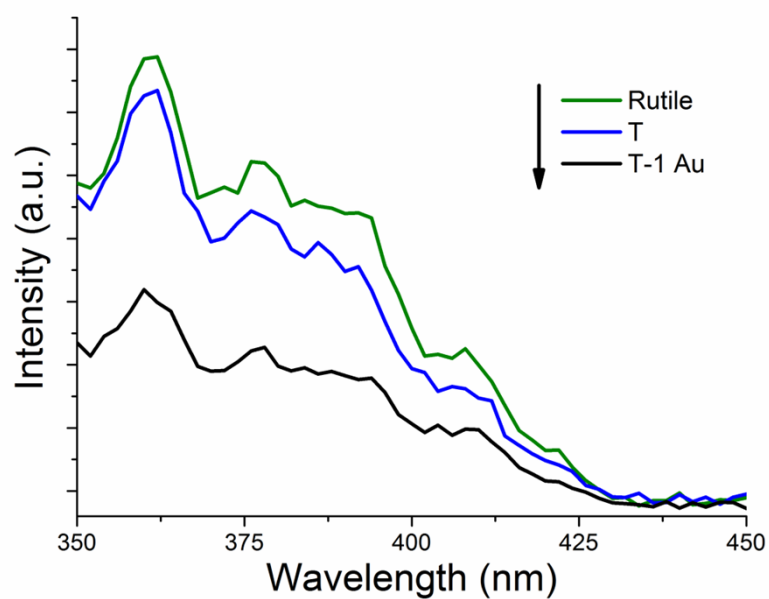


Figure S5 PL spectra of the reduced TiO_2 before and after 1 wt% Au deposition with commercial rutile as a reference.

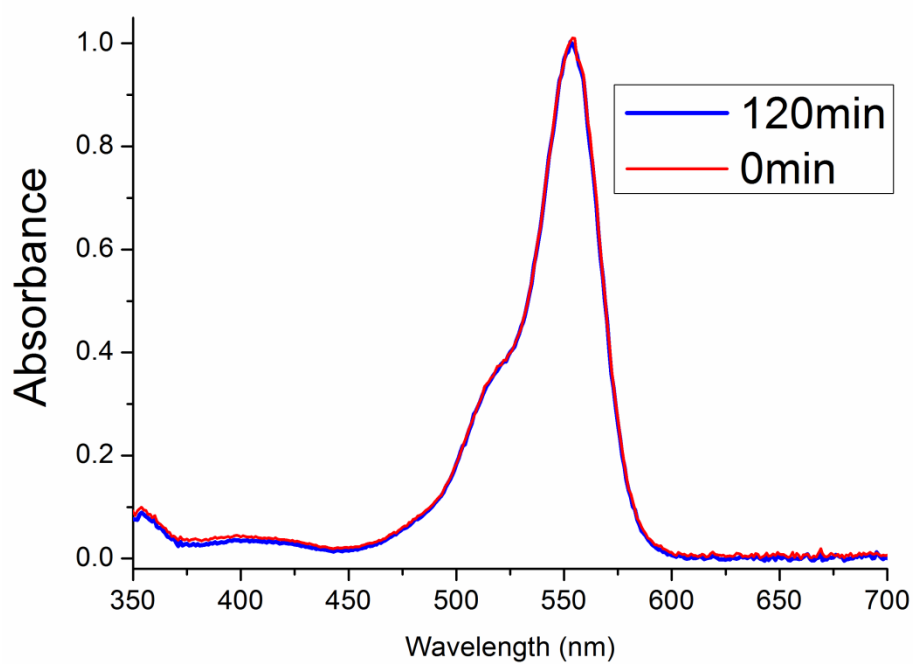


Figure S6. Absorption spectra of RhB solution before and after irradiation for 120 minutes.

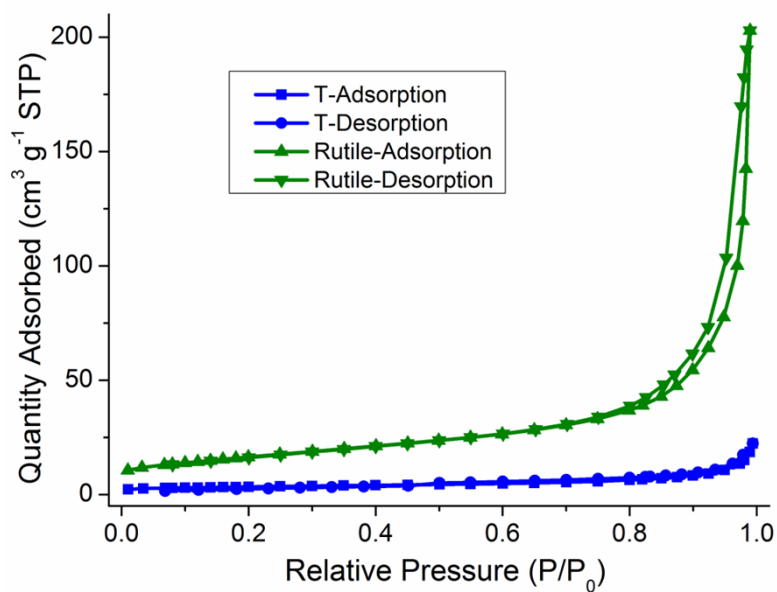


Figure S7 N₂ adsorption-desorption isotherms of reduced TiO₂ and referenced rutile.

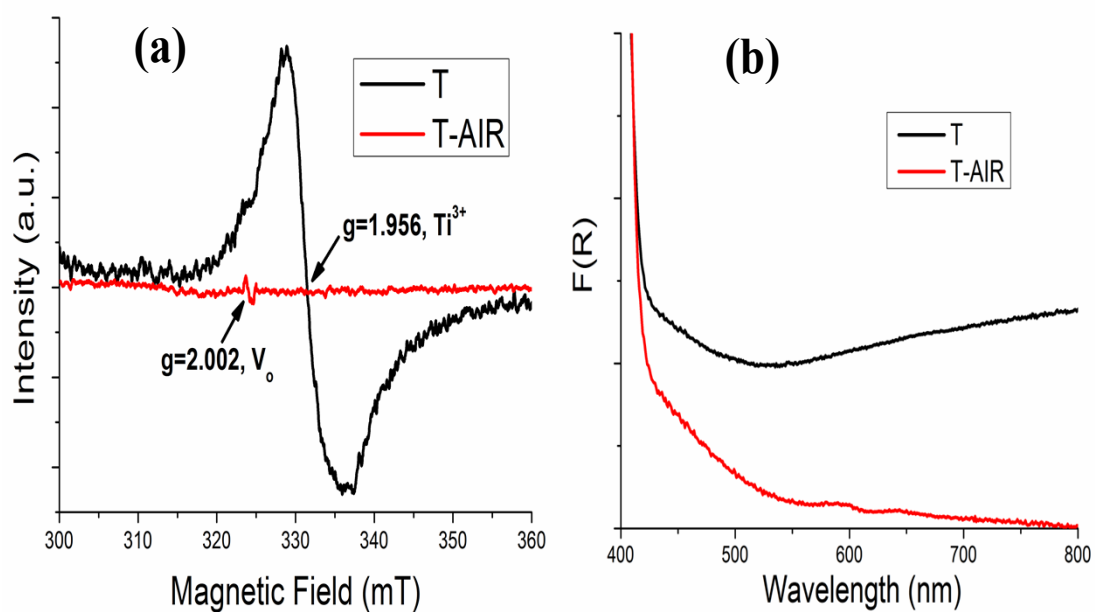


Figure S8 (a) ESR spectra of defective TiO₂ before and after heating in air at 200 °C; (b) DRS spectra of reduced TiO₂ before and after heating in air at 200 °C.

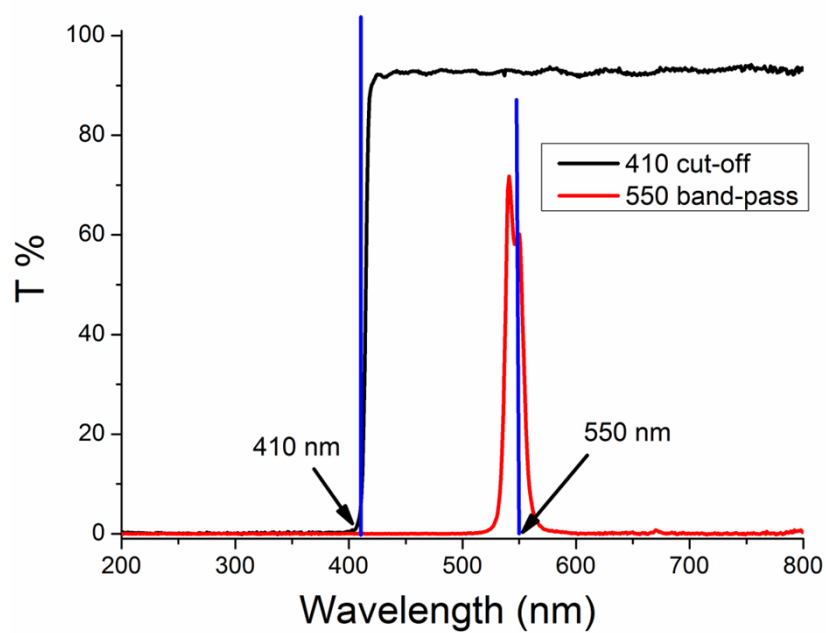


Figure S9 Transmittance spectrum of the optical filter used in the present study.

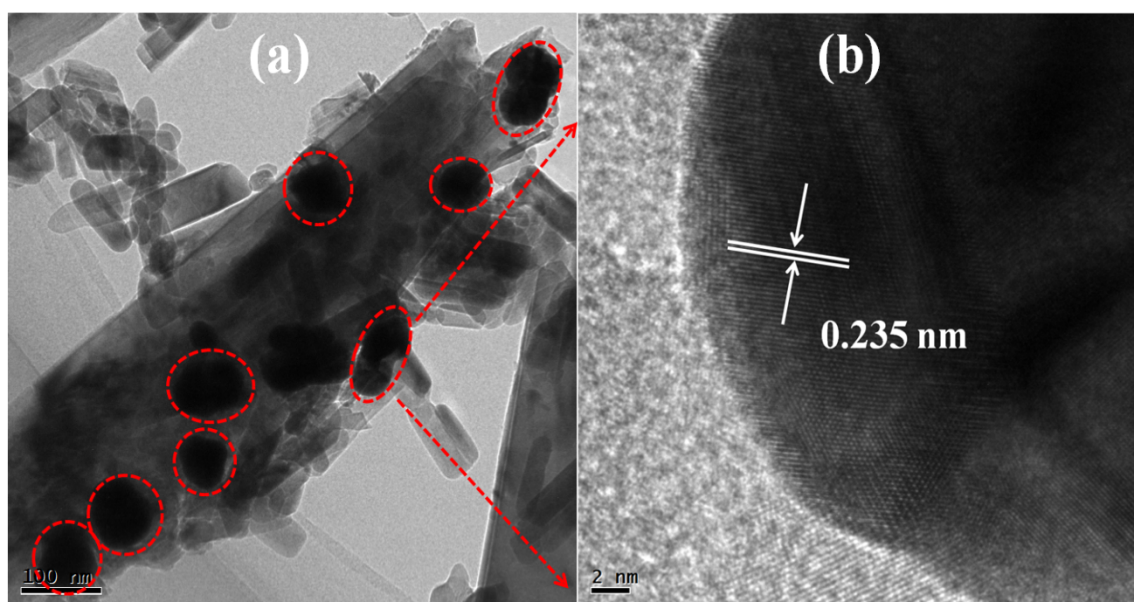


Figure S10 (a) TEM image showing the Au nanoparticle distribution on T-1Au sample after heating at 200°C; (b) HRTEM image showing the d-spacing lattice fringes of Au (111) facet.

Note: After heating, the size of a single Au nanoparticle is about 60-90nm. No serious agglomeration phenomenon is observed.

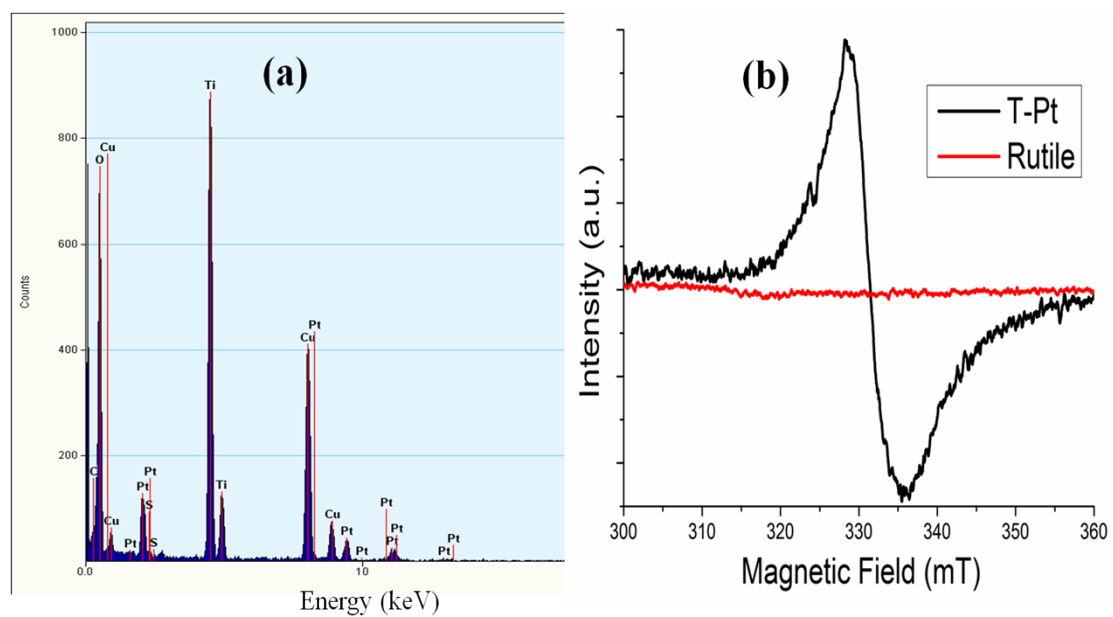


Figure S11 (a) EDS spectrum of the Pt loaded TiO_2 ; (b) ESR spectra of Pt loaded TiO_2 and commercial rutile recorded at 77K.