

**Solar light active plasmonic Au@TiO<sub>2</sub> nanocomposite with superior photocatalytic performance for H<sub>2</sub> production and pollutant degradation**

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**Electronic Supplementary Information**

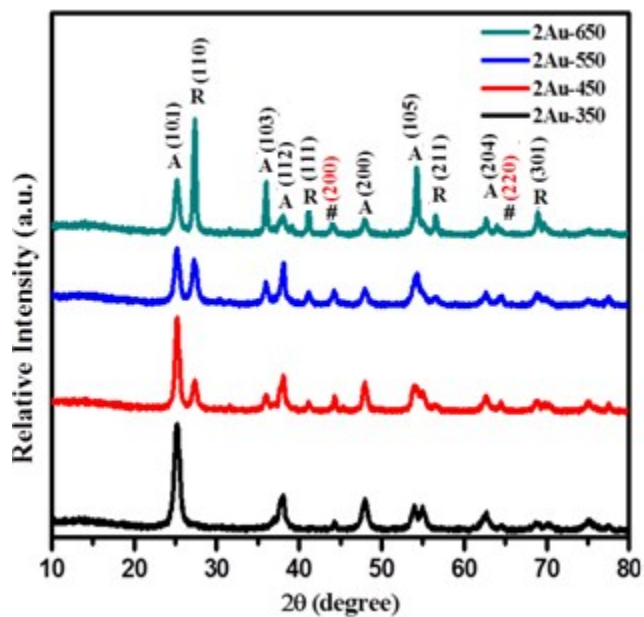


Fig.S1 XRD pattern of 2% Au -TiO<sub>2</sub> calcined at 350, 450, 550 and 650 °C.

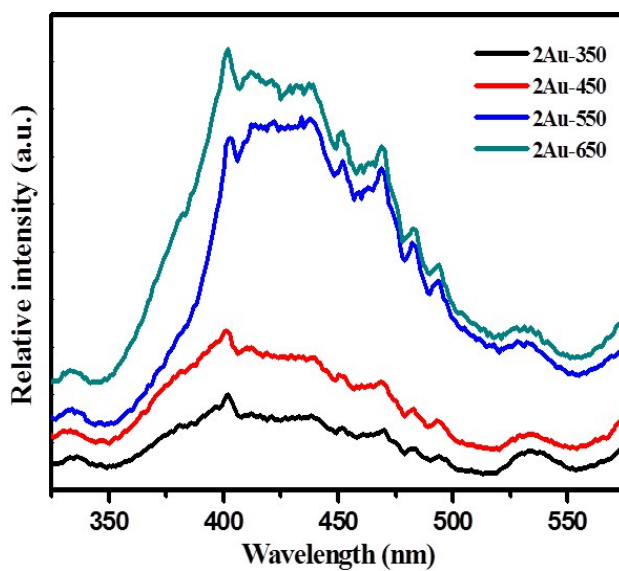


Fig.S2 Photoluminescence spectra of 2% Au -TiO<sub>2</sub> calcined at different temperatures.

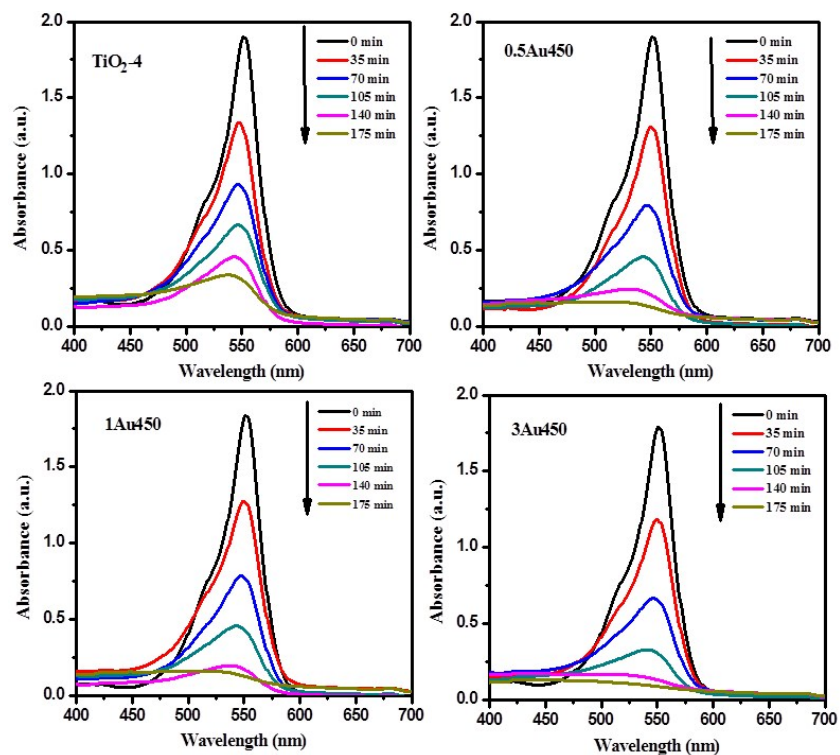


Fig.S3 UV-visible absorption spectrum of Rhodamine B degradation using  $\text{TiO}_2$ -4, 0.5Au450, 1Au450 and 3Au450 photo-catalysts.

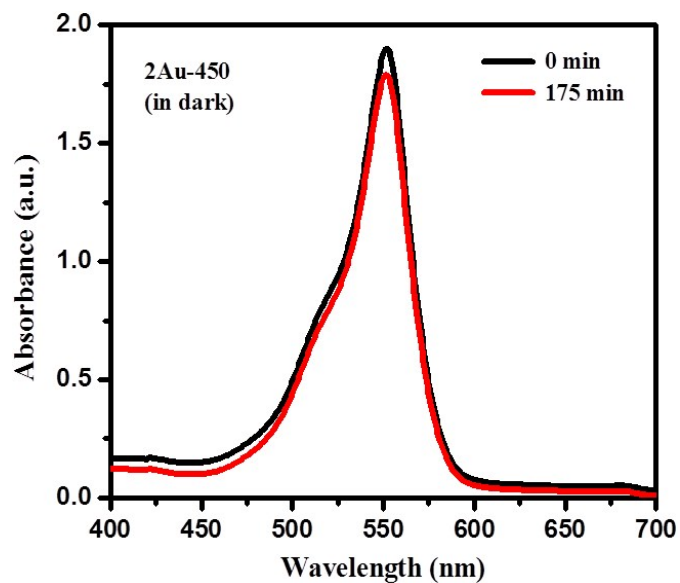


Fig.S4 UV-visible absorption spectrum of Rhodamine B kept in dark in presence of 2Au-450 photocatalyst.

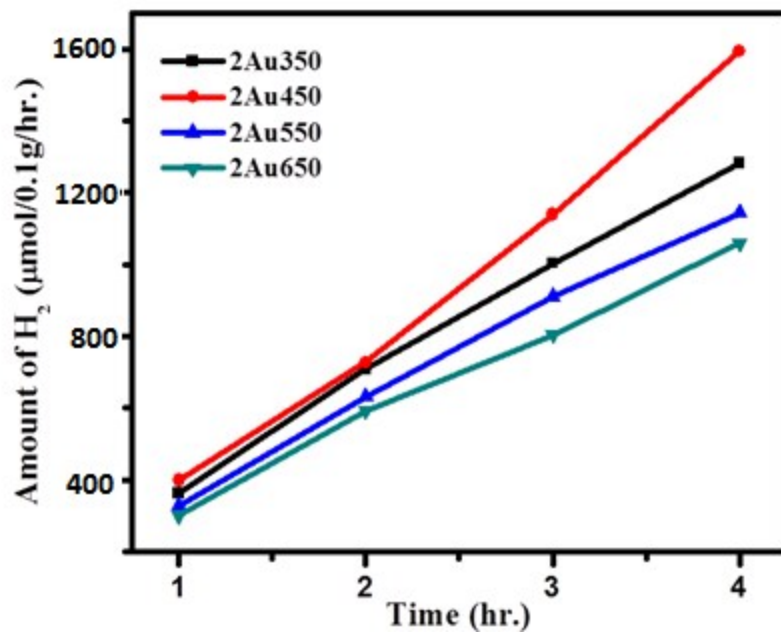


Fig.S5 Amount of H<sub>2</sub> (μmol/0.1g/hr) produced with time using 2% Au -TiO<sub>2</sub> calcined at different temperatures.

Table.S1. Photocatalytic H<sub>2</sub> production using 2% Au- TiO<sub>2</sub> calcined at different temperatures.

Sr. No.	Photocatalyst name	H <sub>2</sub> Production (μmol/0.1g/hr)
1.	2Au-350	321
2.	2Au-450	399
3.	2Au-550	286
4.	2Au-650	265