Supporting information for

TiO_2 as an interfacial-charge-transfer-bridge to construct Eosin Y-mediated direct Z-scheme electron transfer over Co_9S_8 quantum dots/TiO_2 photocatalyst

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Table S1 The average crystallite size of anatase and rutile are calculated by Scherrer's equation

Samples	Anatase (nm)	Rutile (nm)
TiO_2	18.6	20.3
5% Co_9S_8/TiO_2	18.6	20.2
10% Co_9S_8/TiO_2	18.4	20.3
20% Co_9S_8/TiO_2	18.7	20.3
25% Co_9S_8/TiO_2	18.5	20.3

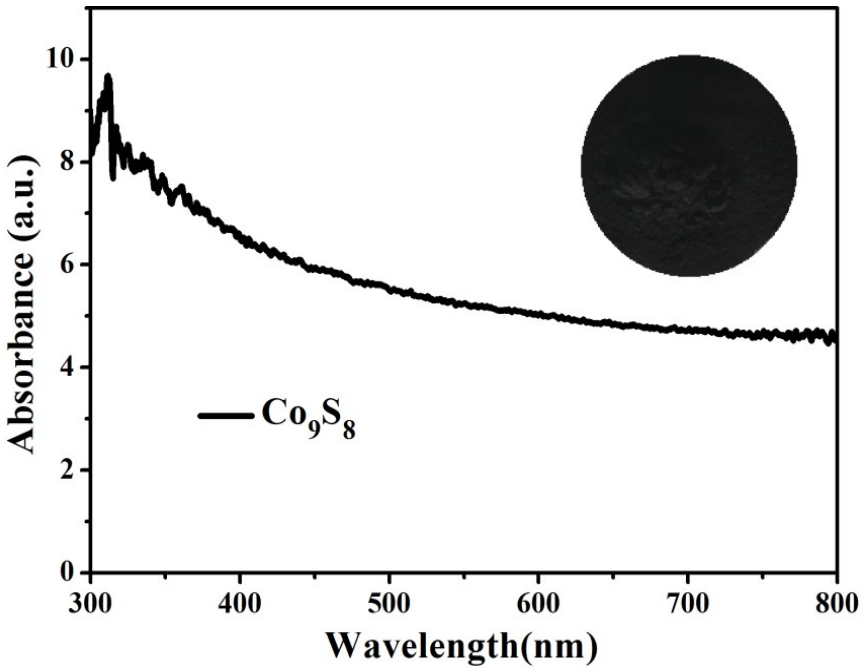

Fig. S1. UV-vis diffuse reflectance spectra of Co_9S_8 (the inset image is the Co_9S_8 sample).

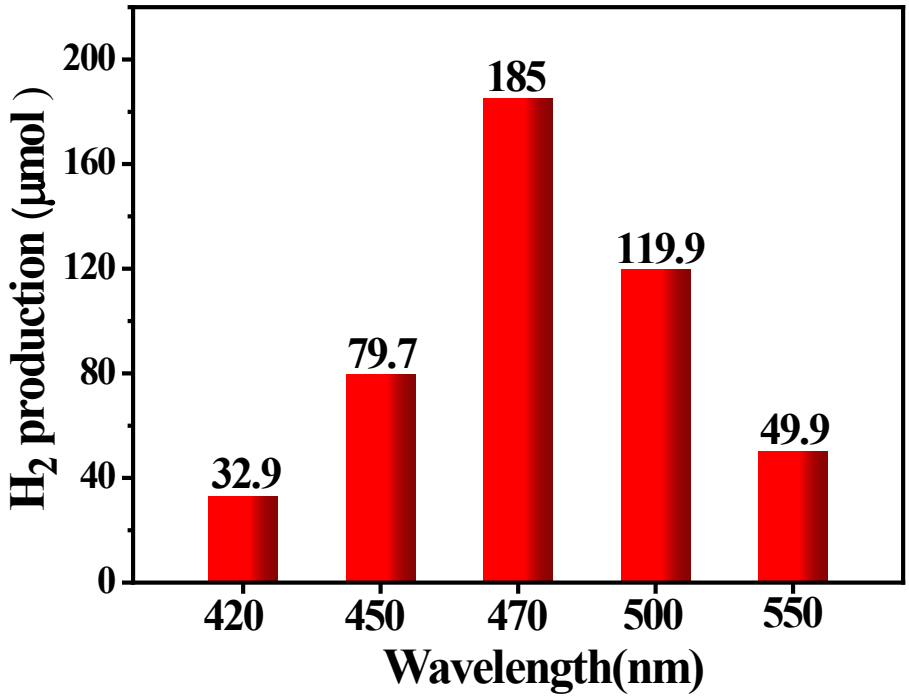

Fig. S2. Photocatalytic H_2 evolution activity for EY (4.0×10^{-4} M) sensitized 20%Co_9S_8 QDs/TiO_2 under different wavelength irradiation. Reaction condition: 30 mg catalyst dispersed in 100 mL 10 v/v% TEOA sacrificial reagent aqueous solution.

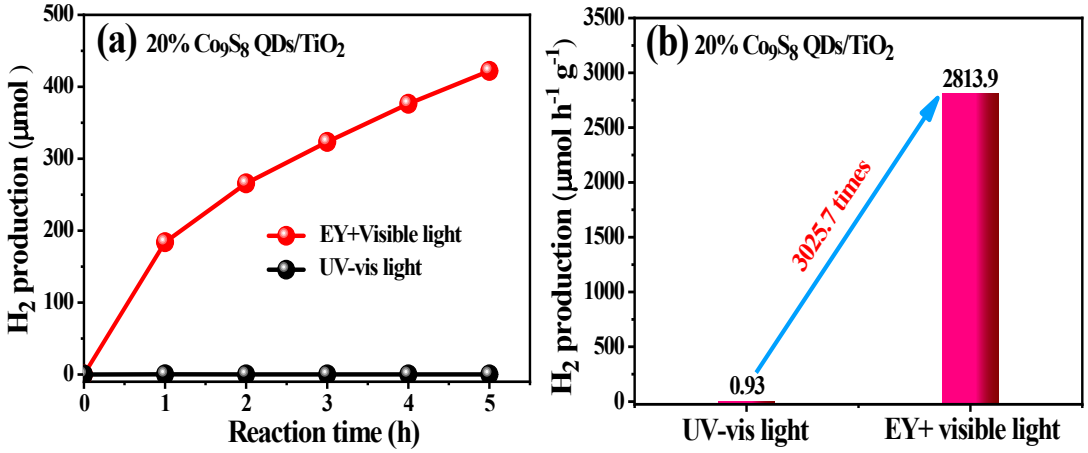

Fig. S3. (a) Time dependent photocatalytic H_2 production and (b) average hydrogen production rates of 20%Co_9S_8/TiO_2 under UV-vis light irradiation and EY-sensitized 20%Co_9S_8 QDs/TiO_2 under visible light irradiation ($\lambda \geq 420$ nm).