

Electronic Supplementary Information

Highly efficient visible/near-IR-light-driven photocatalytic H₂ production over asymmetric phthalocyanine-sensitized TiO₂**

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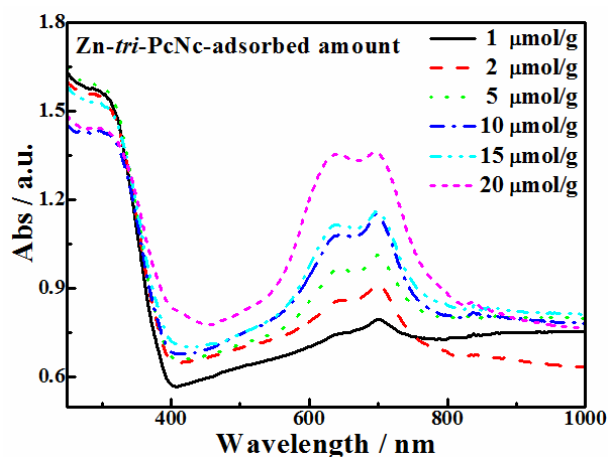


Figure S1. DRS spectra of 1.0wt% Pt-loaded *Zn-tri-PcNc*/TiO₂ with different dye-adsorbed contents.

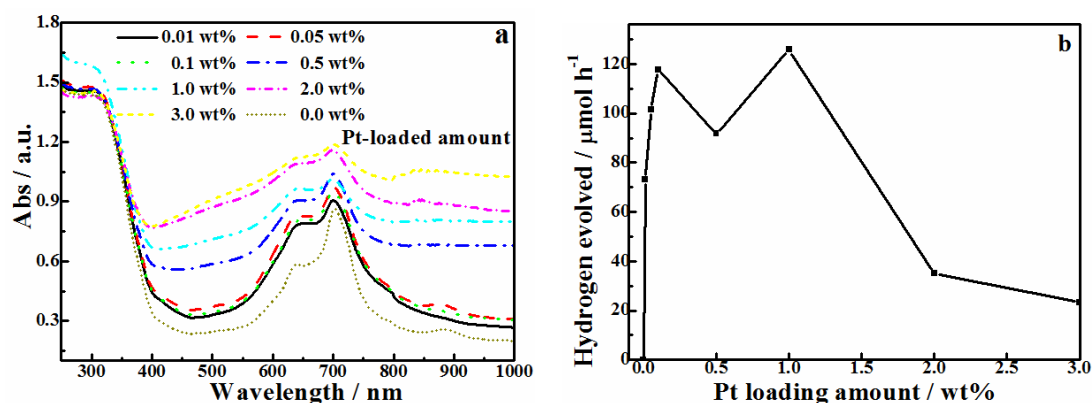


Figure S2. (a) DRS spectra of *Zn-tri-PcNc*/TiO₂ with different Pt-loaded levels, and (b) effect of Pt-loaded amount on the photocatalytic H₂ production rate over *Zn-tri-PcNc*/TiO₂. Conditions: 30 mg photocatalyst with 5 μmol/g dye-adsorbed amount, 10 mM EDTA aqueous solution with original pH value (3.6-3.8) without adjusting.

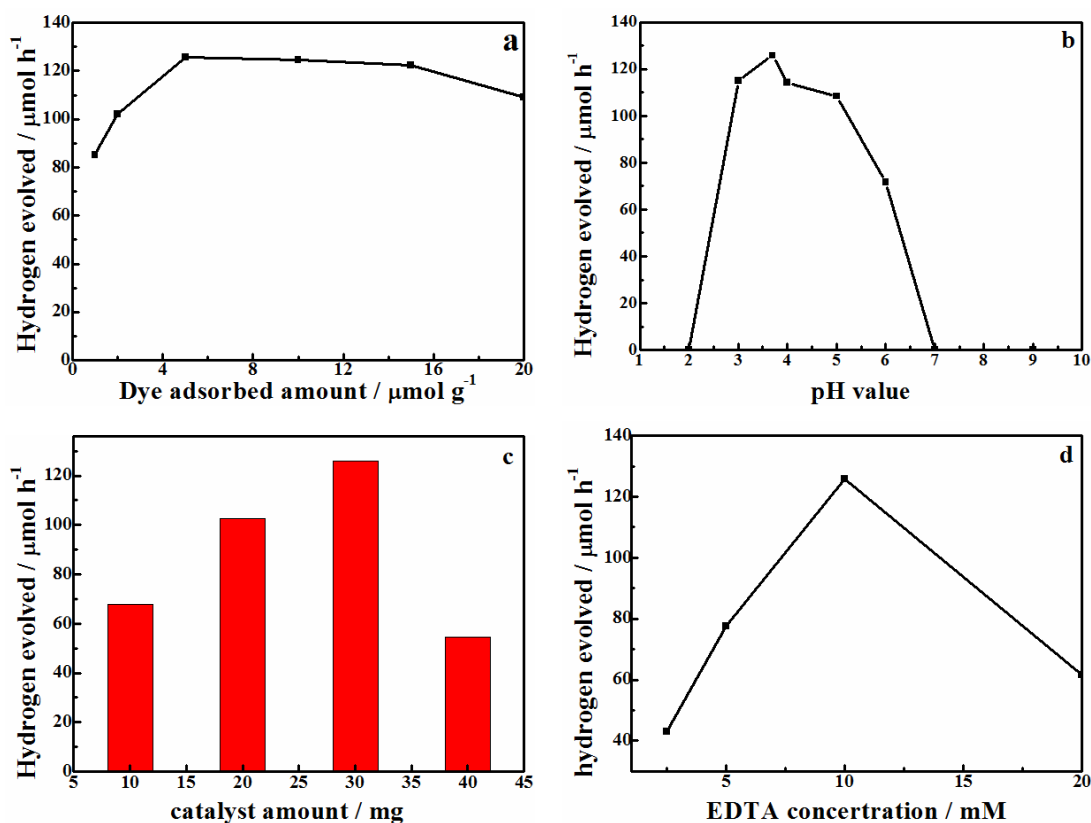


Figure S3. Effects of dye-adsorbed amount (a), pH value (b), photocatalyst amount (c), and EDTA concentration (d) on the photocatalytic H₂ production rate over Zn-tri-PcNc/TiO₂. Conditions: 30 mg photocatalyst with 5 $\mu\text{mol/g}$ dye-adsorbed amount, 10 mM EDTA aqueous solution with original pH value (3.6-3.8) without adjusting if otherwise statement.

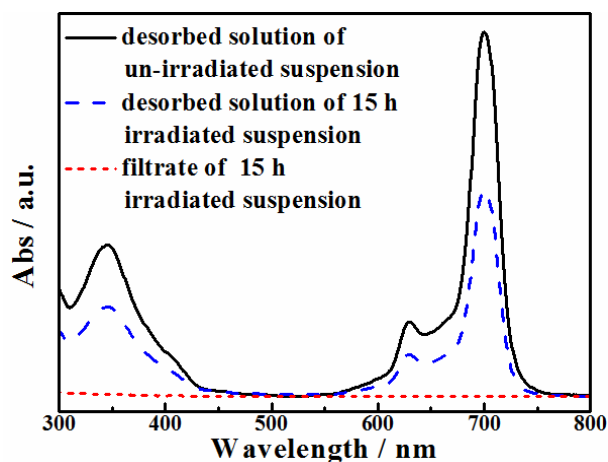


Figure S4. UV-vis absorption spectra: filtrate of Zn-tri-PcNc/TiO₂ suspension after 15h irradiation; desorbed solution of un-irradiated Zn-tri-PcNc/TiO₂ suspension; desorbed solution of 15h irradiated Zn-tri-PcNc/TiO₂ suspension.

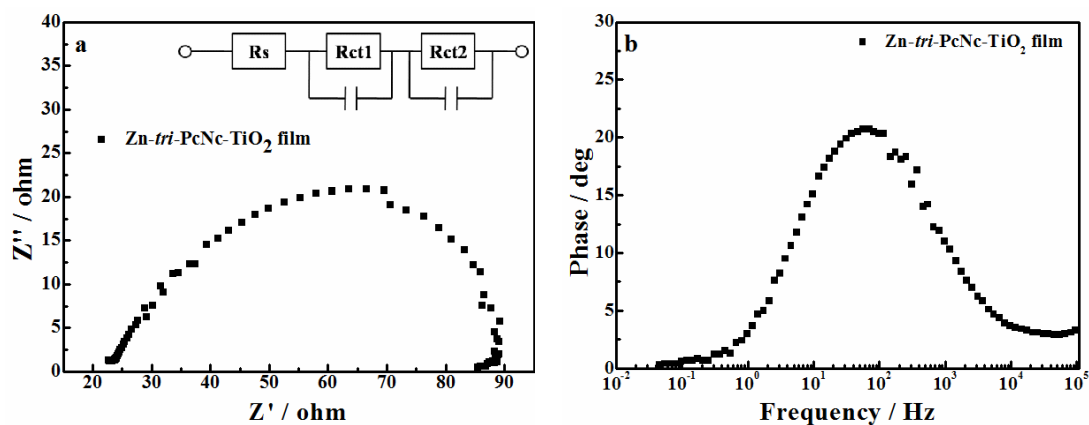


Figure S5. Electrochemical impedance spectra (EIS) of the solar cells fabricated with **Zn-tri-PcNc/TiO₂** electrode. (a) Nyquist plot; (b) Bode phase plot.

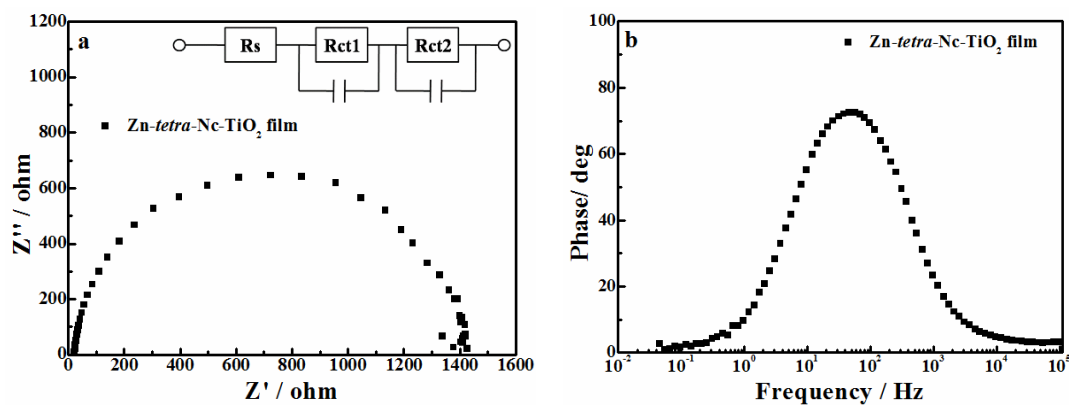


Figure S6. Electrochemical impedance spectra (EIS) of the solar cells fabricated with **Zn-tetra-Nc/TiO₂** electrode. (a) Nyquist plot; (b) Bode phase plot.

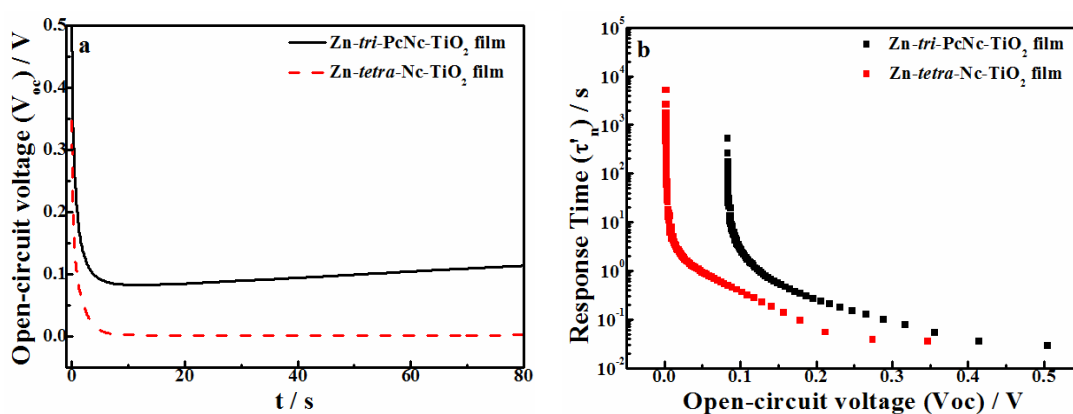


Figure S7. Open-circuit voltage decay (OCVD) curves (a) and corresponding $\tau_n \sim V_{OC}$ curves (b) of the solar cells fabricated with **Zn-tri-PcNc/TiO₂** and **Zn-tetra-Nc/TiO₂** film electrode.

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Spectral Output

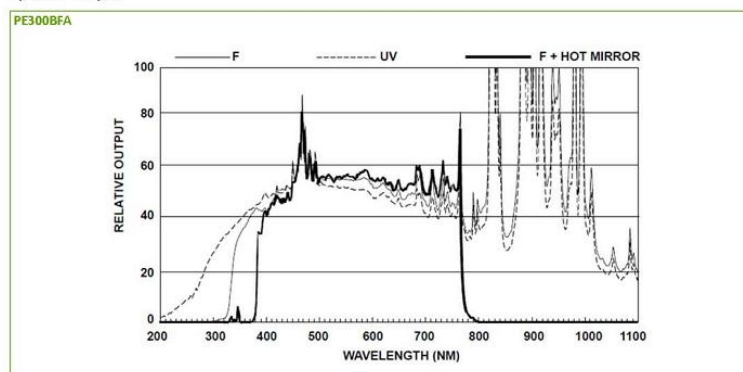


Figure S8. Emission spectrum of Xe-lamp provided by Excelitas Technologies can be seen at http://www.excelitas.com/downloads/DTS_PE300BFA.pdf. F = UV filtered output.