Electronic Supplementary Material (ESI) for RSC Advances.

Cocatalyst Designing: A Binary Noble-metal-free Cocatalyst System Consisting of $ZnIn_2S_4$ and $In(OH)_3$ for Efficient Visible-light Photocatalytic Water Splitting

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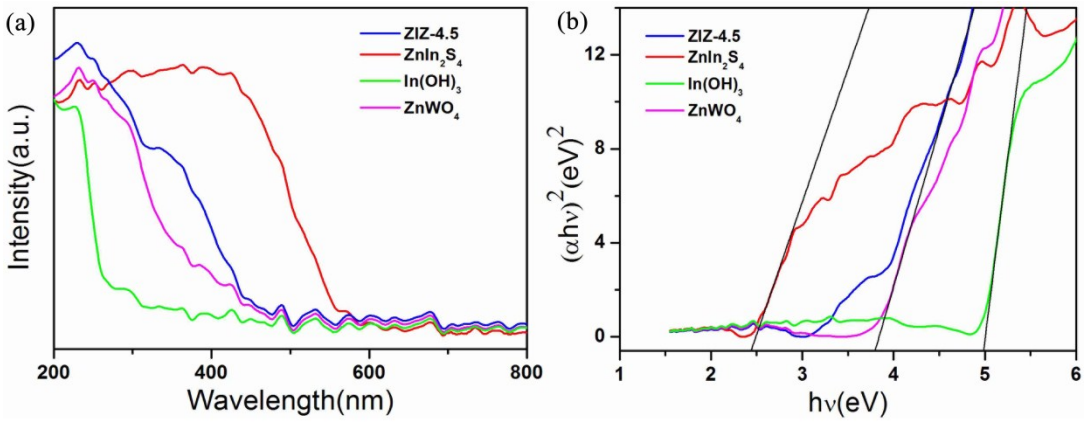

Fig. 1 (a) UV-vis diffuse reflectance spectra of ZIZ-4.5, $ZnIn_2S_4$, $In(OH)_3$ and $ZnWO_4$, (b) The band gap energy of $ZnIn_2S_4$, $In(OH)_3$ and $ZnWO_4$.

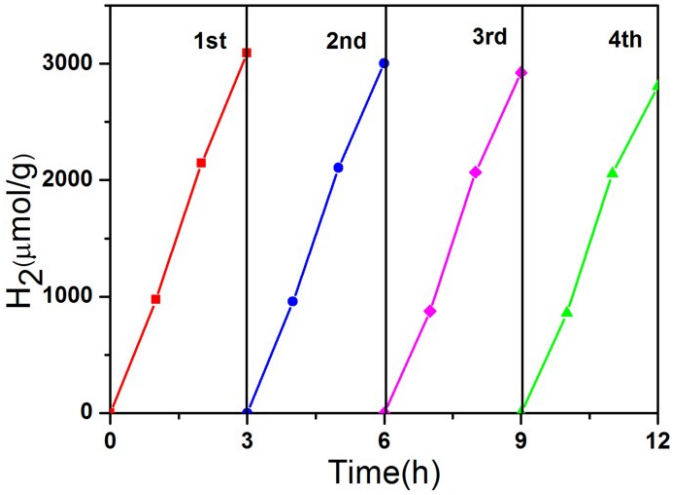

Fig. 2 Cyclic H_2 production on ZIZ-4.5 photocalyst. Reaction Conditions: photocatalyst 50 mg; light source, 300 W Xenon lamp equipped with a cut-off filter (λ > 420nm); Reactant solution: 100 mL aqueous solution containing 0.25M Na_2SO_3 and 0.35M Na_2S.

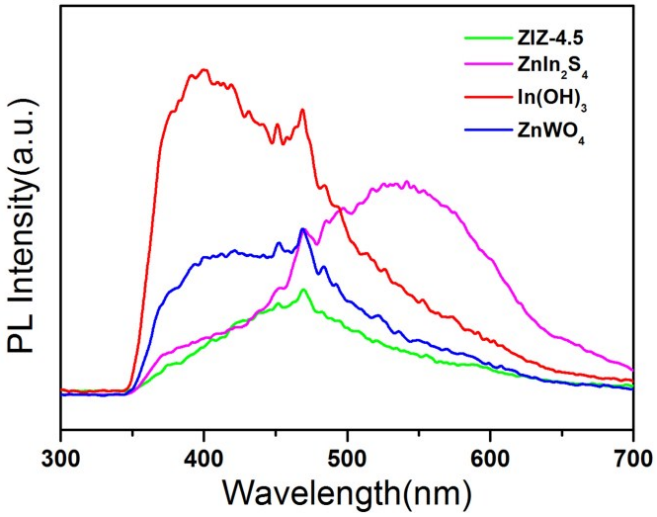

Fig. 3 Photoluminescence (PL) spectra of ZIZ-4.5, $ZnIn_2S_4$, $In(OH)_3$ and $ZnWO_4$ at room temperature (λex = 215 nm).

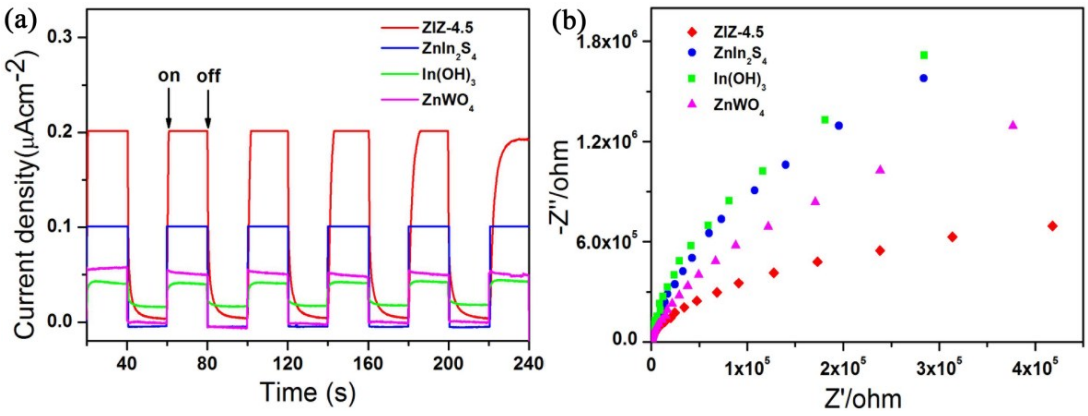

Fig. 4 (a) Transient photocurrent response and (b) the electrochemical impedance spectroscopy of ZIZ-4.5, $ZnIn_2S_4$, $In(OH)_3$ and $ZnWO_4$.