

## Supporting information

# Constructing Z-scheme 3D WO<sub>3</sub>@Co<sub>2</sub>SnO<sub>4</sub> heterojunction as dual-photocathode for production of H<sub>2</sub>O<sub>2</sub> and in-situ degradation of organic pollutants

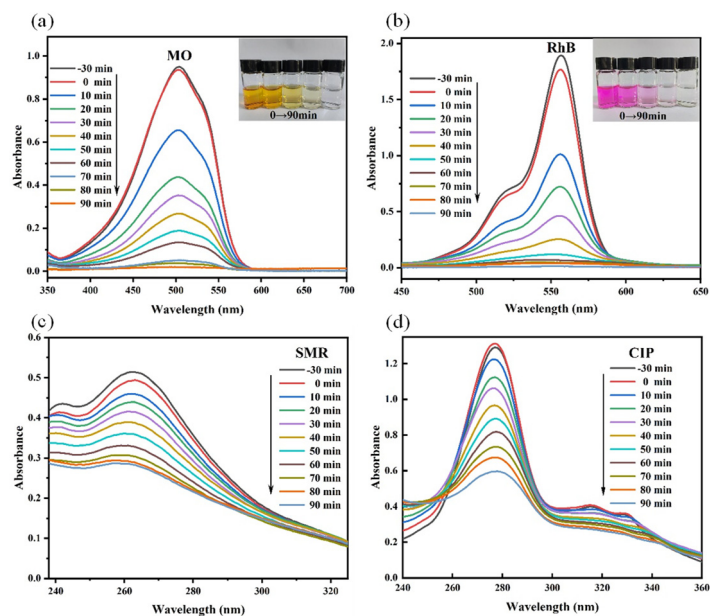
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Figure S1a and b displayed UV-Vis spectra of organic dyes (MO and RhB), and it can be seen that the concentration of MO (RhB) was decreased along with the increased reaction time. Also, from the inset of Figure S1a and b, the color of MO (RhB) was faded little by little. The degradation efficiency of MO (RhB) was 98.6% (99.4%) after PEC degradation of 90 min. In addition to organic dyes, other types organic pollutants also can be effectively decomposed. From The PEC degradation efficiencies of SMR and CIP in Figure S1c and d can reach 44.9% and 54.5%, respectively. The above results demonstrated that the double-cathode system was fit for the degradation of different types of pollutants.



**Figure S1** Change in UV-Vis spectra of different organic pollutants (a) MO, (b) RhB, (c) SMR, (d) CIP, inset of (a) and (b) the color of solution change with different time.