Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Preparation and enhanced photoelectrochemical performance of p-n heterojunction $CuFe_2O_4/WO_3$ nanocomposite film

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To observe the effect of composition (ratio of p/n) on the photoelectrochemical performance, various composite films were fabricated by changing the concentration of $Cu(CH_3COO)_2{\cdot}H_2O$ and $K_3Fe(CN)_6$. In detail, the $Cu(CH_3COO)_2{\cdot}H_2O$ is 0.015, 0.03, 0.06 and 0.09 g, respectively, for the $CuFe_2O_4/WO_3$-1, $CuFe_2O_4/WO_3$-2, $CuFe_2O_4/WO_3$-3 and $CuFe_2O_4/WO_3$-4. Correspondingly, the $K_3Fe(CN)_6$ is 0.049, 0.098, 0.196 and 0.294 g, respectively, for the $CuFe_2O_4/WO_3$-1, $CuFe_2O_4/WO_3$-2, $CuFe_2O_4/WO_3$-3 and $CuFe_2O_4/WO_3$-4. The photocurrent was measured from 0 to 1.0 V (vs. Ag/AgCl), as shown in Fig.S5.

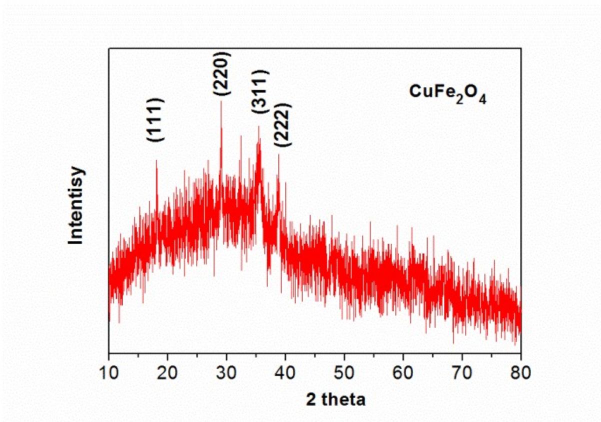

Fig.S1 XRD pattern of the $CuFe_2O_4$

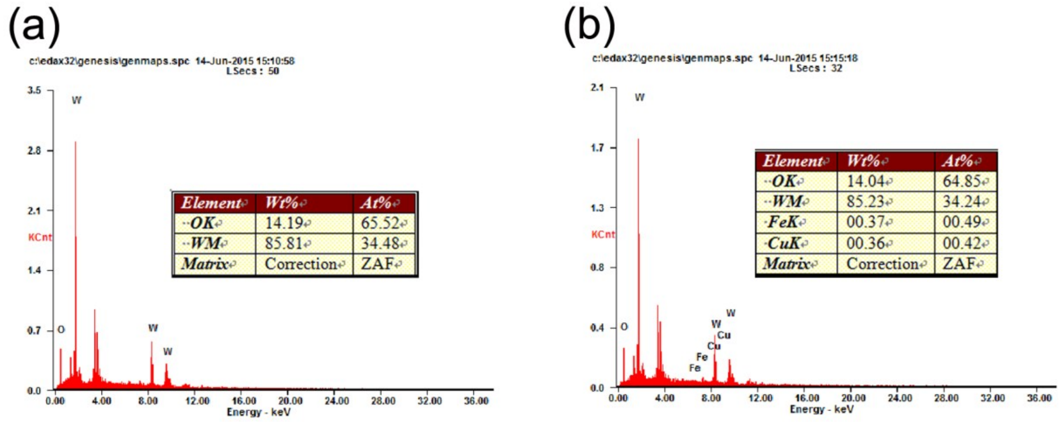

Fig.S2 EDX of samples: (a) WO_3 and (b) $WO_3/CuFe_2O_4$

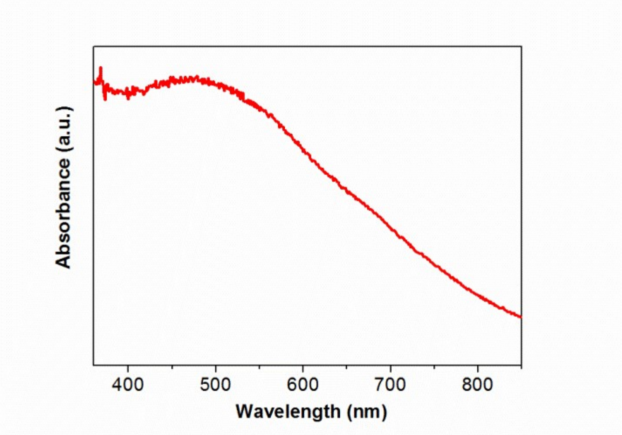

Fig.S3 UV-Vis absorbance spectroscopy of the bare $CuFe_2O_4$

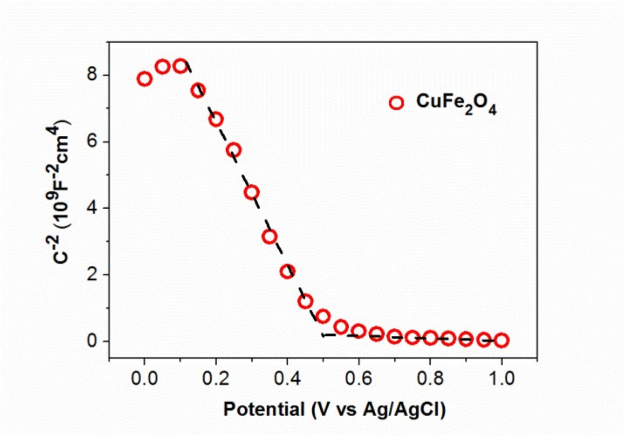

Fig.S4 Mott−Schottky plots of the $CuFe_2O_4$

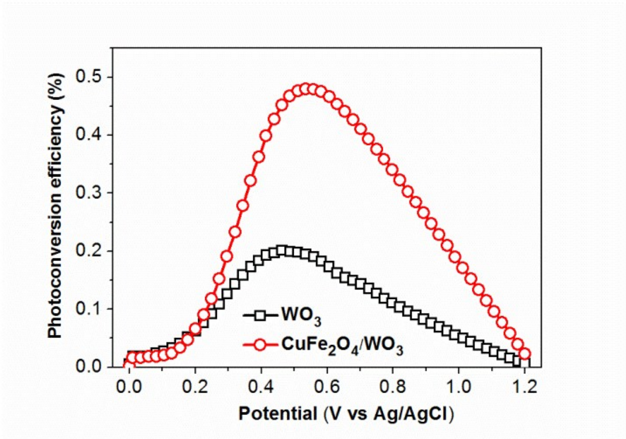

Fig.S5 Photoconversion efficiency of WO_3 and $CuFe_2O_4/WO_3$ films

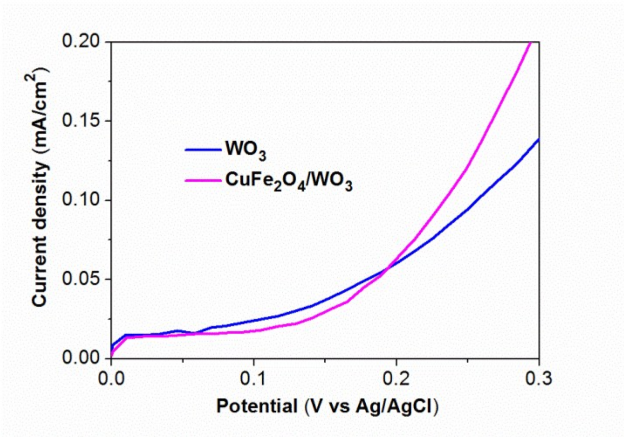

Fig.S6 Onset potential of the photocurrents of different samples

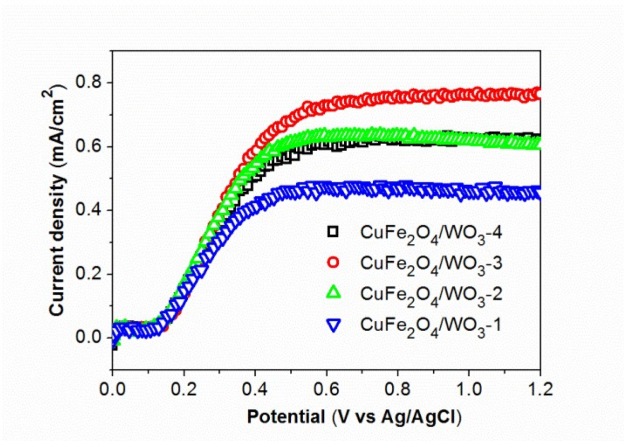

Fig.S7 Photocurrent curves of $CuFe_2O_4/WO_3$ films under illumination

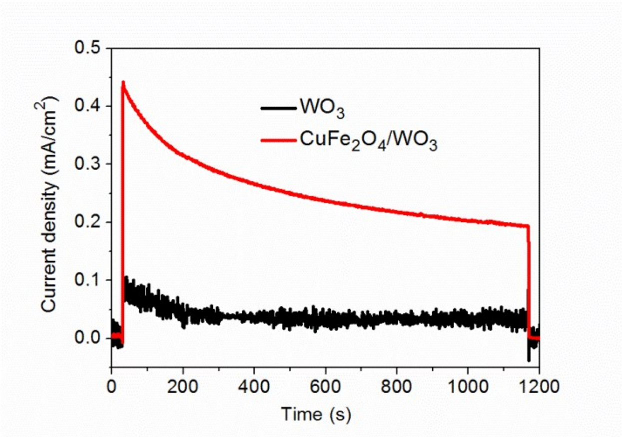

Fig.S8 Photocurrent-time plot of WO_3 and $WO_3/CuFe_2O_4$ under illumination