Electronic Supporting Material on RSC Advances entitled "Ag@ZIF-8/g-C_3N_4 Z-scheme photocatalyst for the enhanced removal of multiple classes antibiotics by integrated adsorption and photocatalytic degradation under visible light irradiation"

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To further elucidate the degradation process, the main intermediates of SCP and CIP were examined with UHPLC-MS/MS. Figure S1(a) shows the total ion chromatogram of sulfachloropyridazine (SCP). It can be seen that there are mainly two degradation intermediates. According to the mass-to-charge ratio of the intermediate and the characteristic fragment ions, two possible degradation pathways for degrading CIP are proposed in Fig. S2(b). N atoms and the sulfo group are electron-rich groups, that are prone to electrophilic reactions, these positions are preferentially attacked by ROS, resulting in cleavage of the S-N bond of SCP and conversion of SCP into M_1, and M_2 is the result of further oxidation of $-NH_2$. The ring opening of the chloropyridazine ring further generates small molecule compounds. Eventually mineralized to water, carbon dioxide and other small molecules.

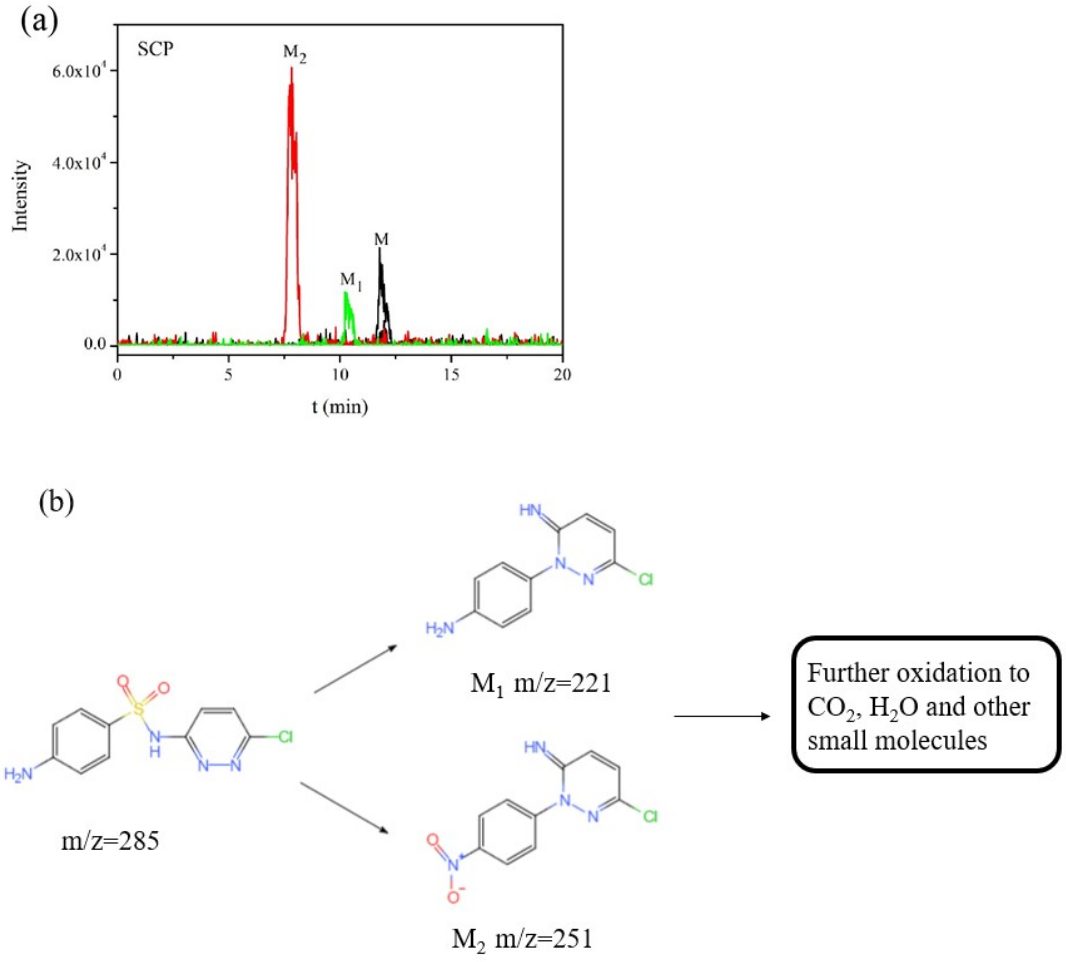

Fig. S1 (a) the total ion chromatogram of SCP

(b) Possible photodegradation pathways of SCP under visible light irradiation

Figure S2(a) shows the total ion chromatogram of ciprofloxacin (CIP). It can be seen that the parent of CIP (m/z = 332) was degraded to produce new products. According to the mass-to-charge ratio of the intermediate and the characteristic fragment ions, two possible degradation pathways for degrading CIP are proposed in Fig. S2(b). The cleavage and loss of piperazine ring of CIP could take place through the rout CIP→M_1 (m/z =334) →M_2 (m/z = 306) →M_3 (m/z = 262), and subsequent loss of amino group, cyclopropyl group, and cyclopropyl group yielded M_4 (m/z = 164). M_4 was additionally changed to M_5 (m/z = 156) by the cleavage of quinolone ring, which subsequently converted to form M_6 (m/z = 154) through the substitution of the F atom with a •OH through decarboxylation. Eventually mineralized to water, carbon dioxide and other small molecules.

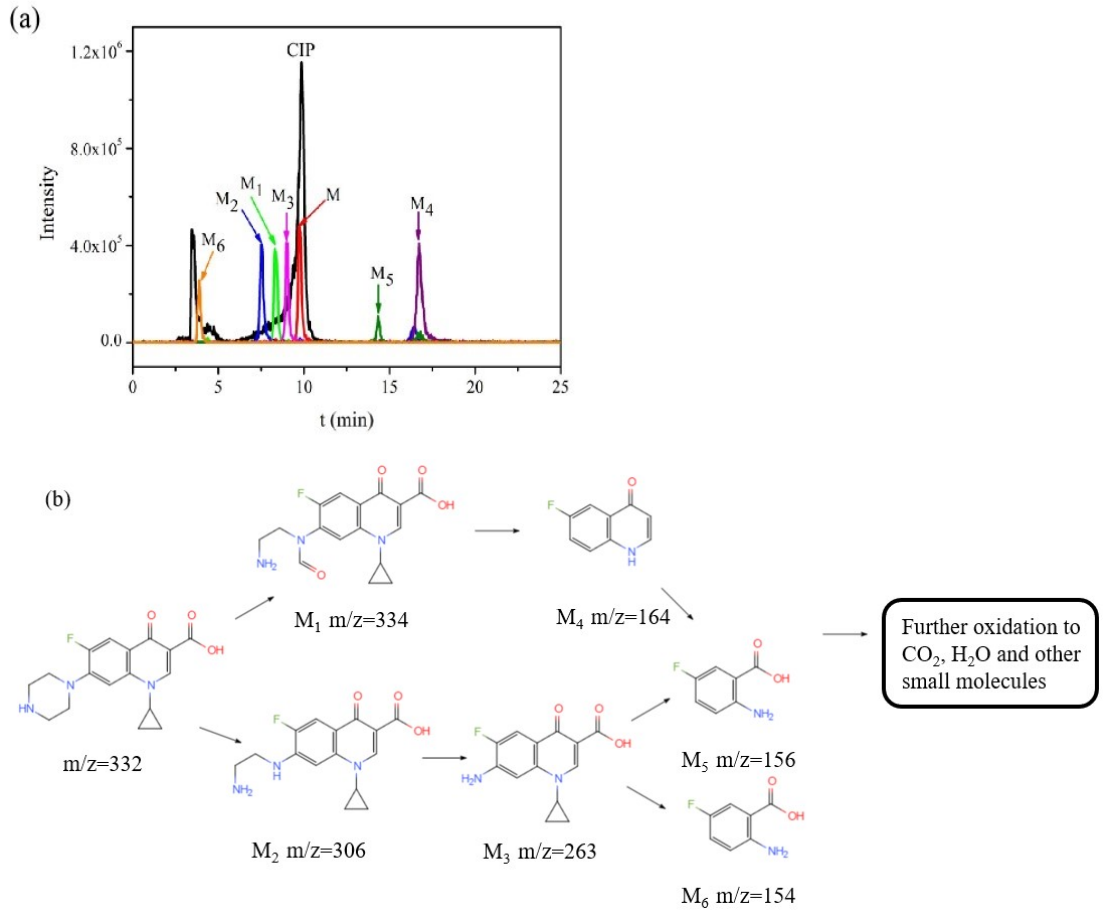

Fig. S2 (a) the total ion chromatogram of CIP

(b) Possible photodegradation pathways of CIP under visible light irradiation

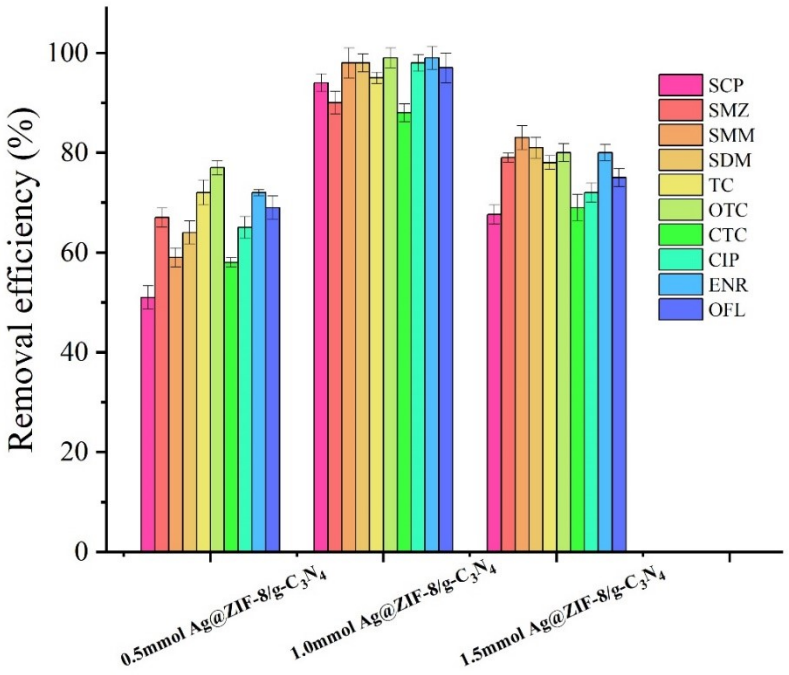

Fig. S3 degradation of antibiotics by Ag@ZIF-8/g-C_3N_4 with different silver nitrate addition amount as photocatalysts under visible light irradiation

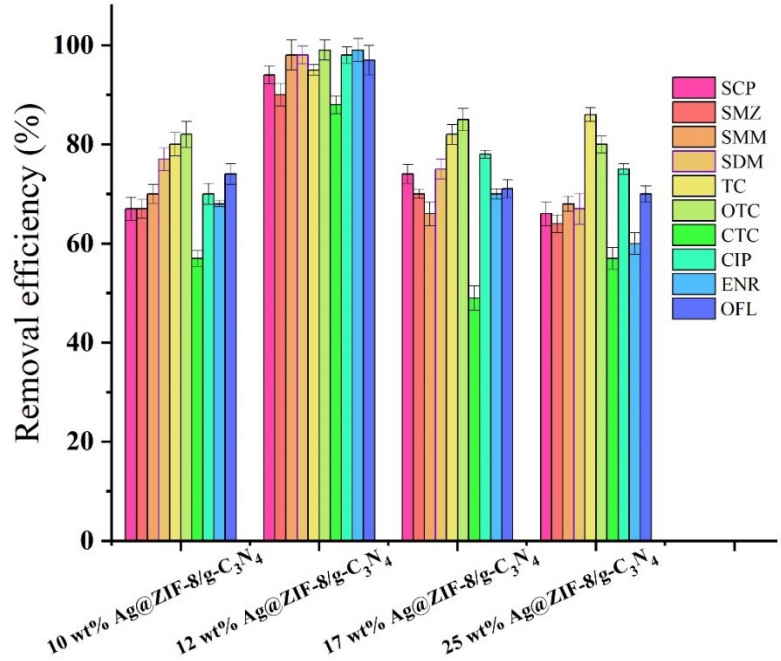

Fig. S4 degradation of antibiotics by Ag@ZIF-8/g-C_3N_4 with different ratio of Ag@ZIF-8 and g-C_3N_4 as photocatalysts under visible light irradiation