Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Supporting Information

A novel Fe-free photo-electro-Fenton-like system for enhanced ciprofloxacin destruction: bifunctional Z-scheme WO_3/g-C_3N_4

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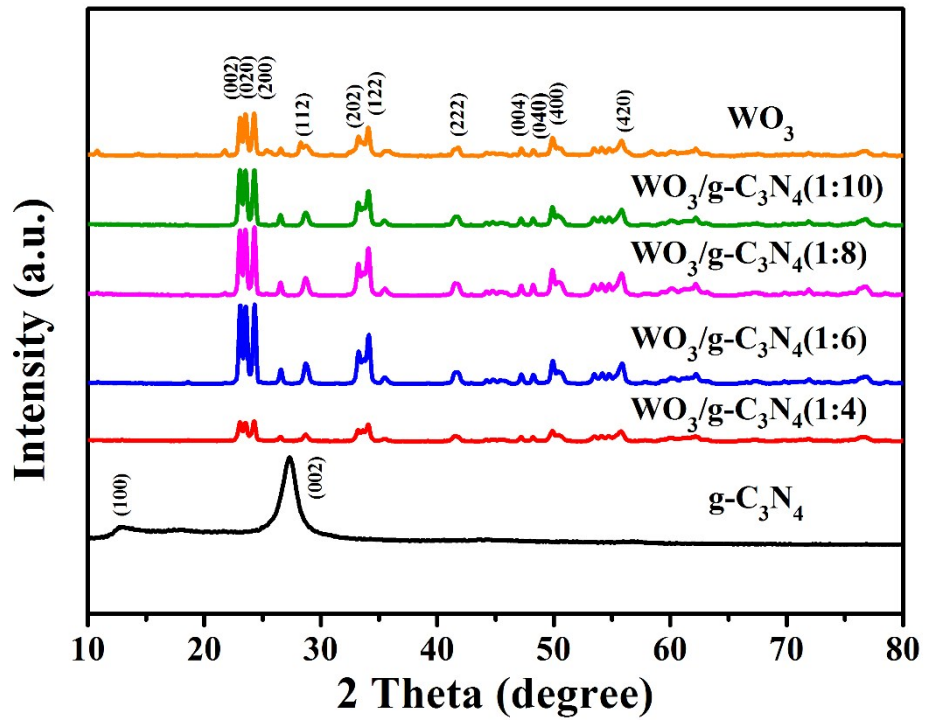


Fig. S1 XRD patterns of WO_3/g-C_3N_4, WO_3 and g-C_3N_4.

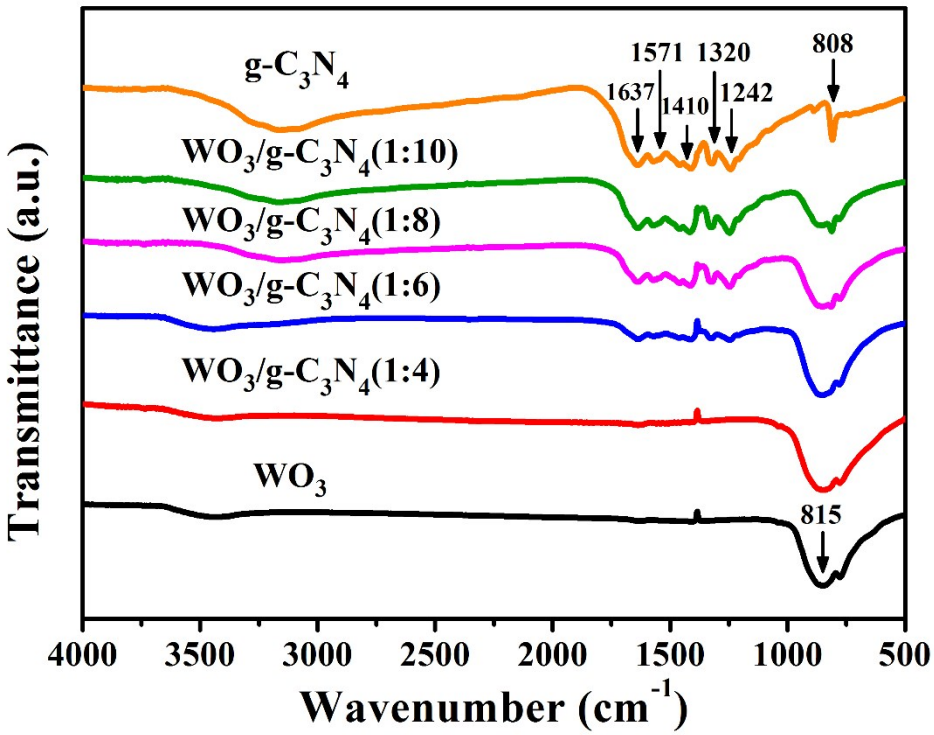


Fig. S2 FT-IR spectrum of WO_3/g-C_3N_4, WO_3 and g-C_3N_4.

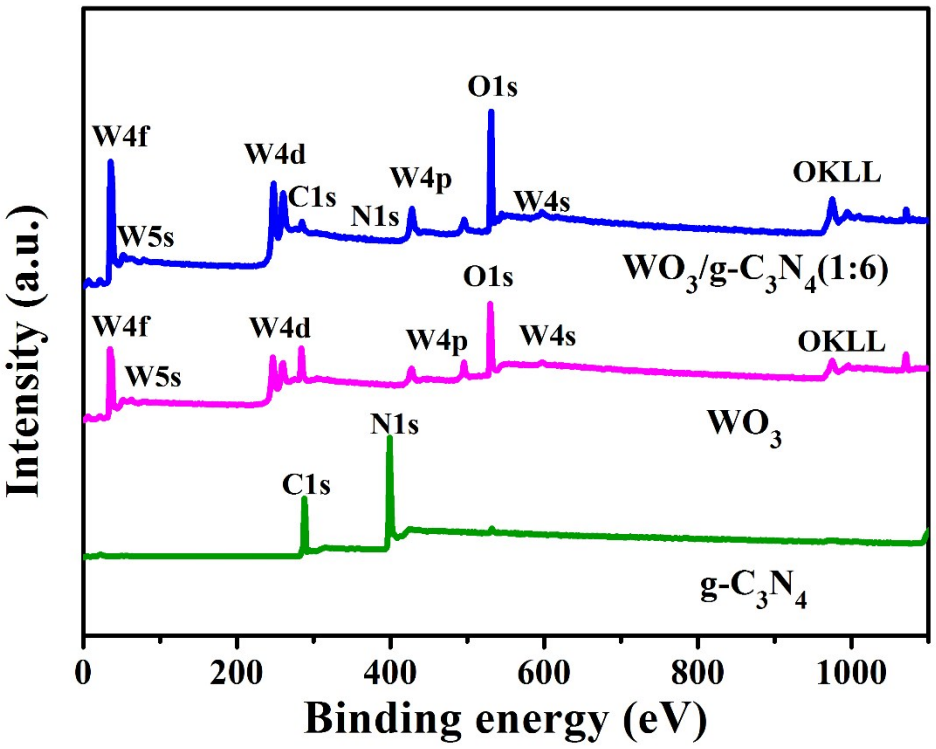


Fig. S3 XPS survey of WO_3/g-C_3N_4 (1:6), WO_3 and g-C_3N_4.

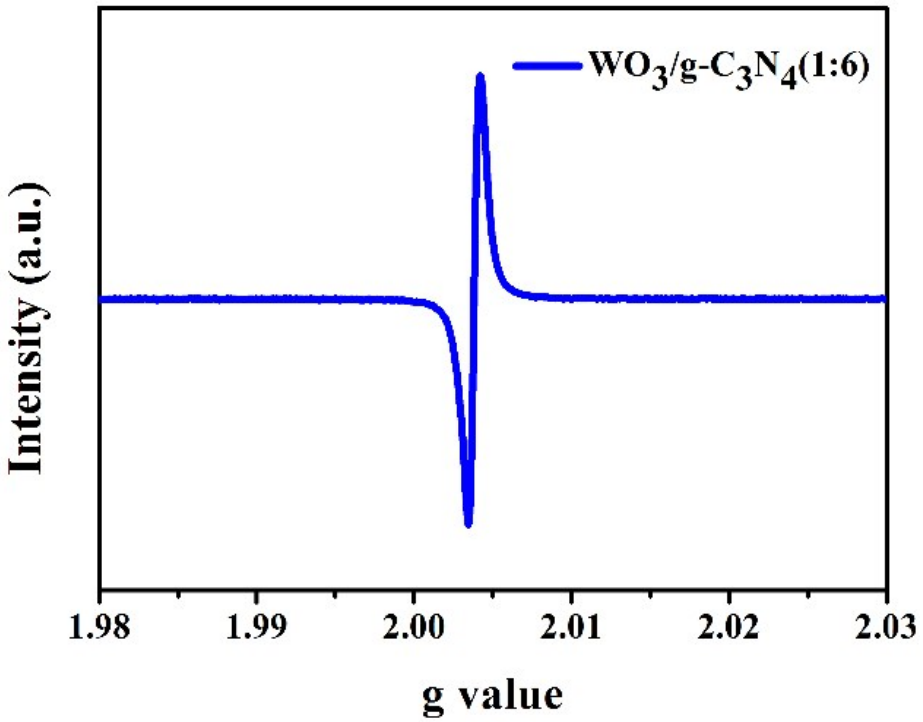


Fig. S4 EPR spectrum of WO_3/g-C_3N_4 (1:6).

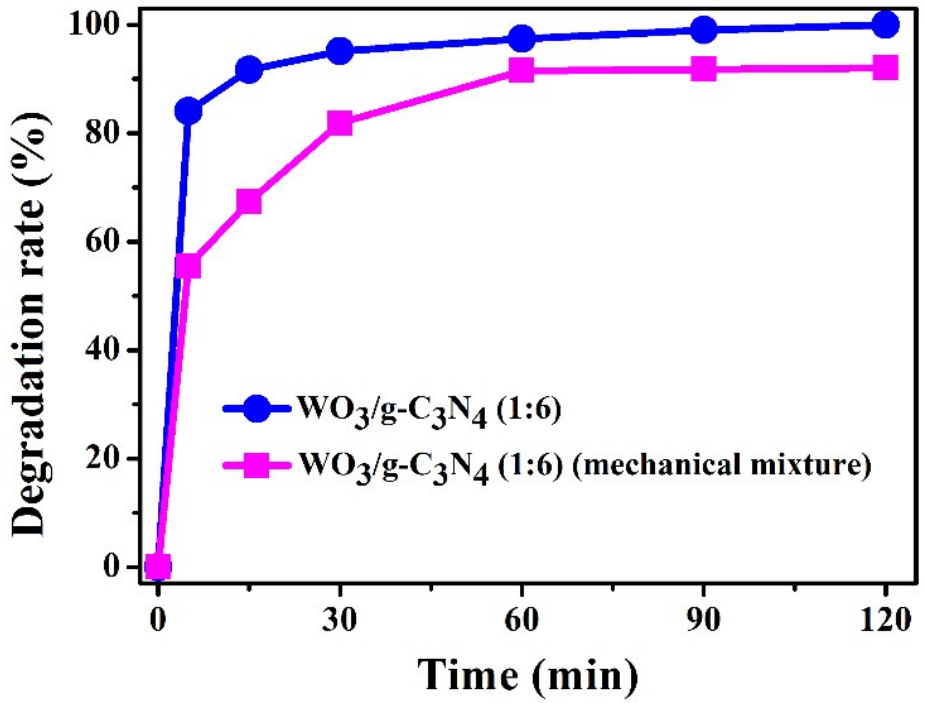


Fig. S5 Degradation rate of CIP with WO_3/g-C_3N_4 (1:6) and the mechanical mixture containing WO_3 and g-C_3N_4 with molar ratio 1:6 in PEF-like system, respectively.

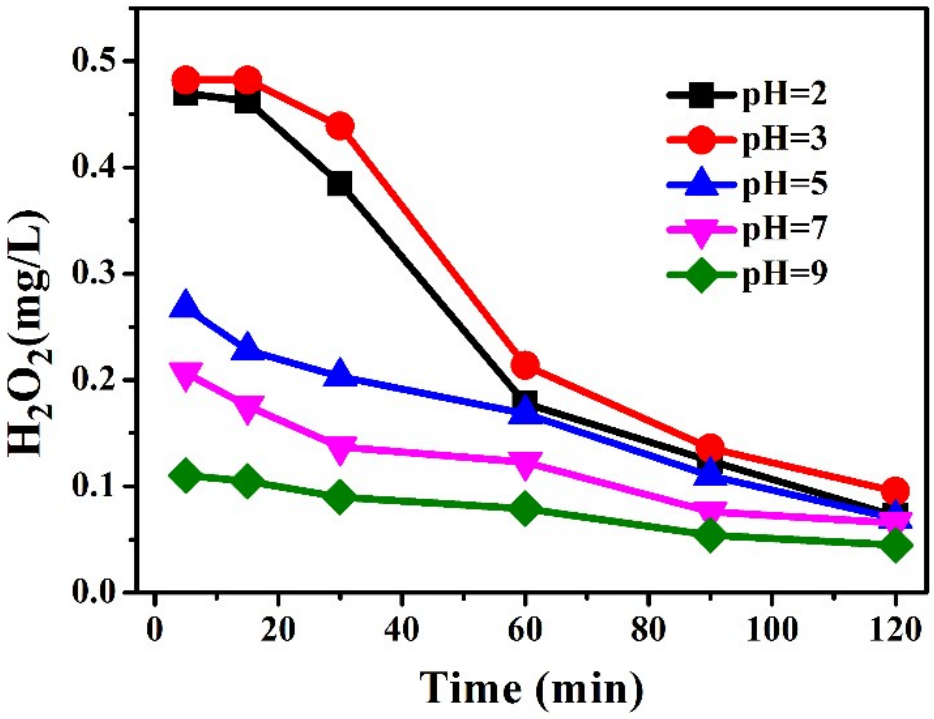


Fig. S6 The concentration of electro-generated H_2O_2 at different pH in PEF-like system with WO_3/g-C_3N_4 (1:6).

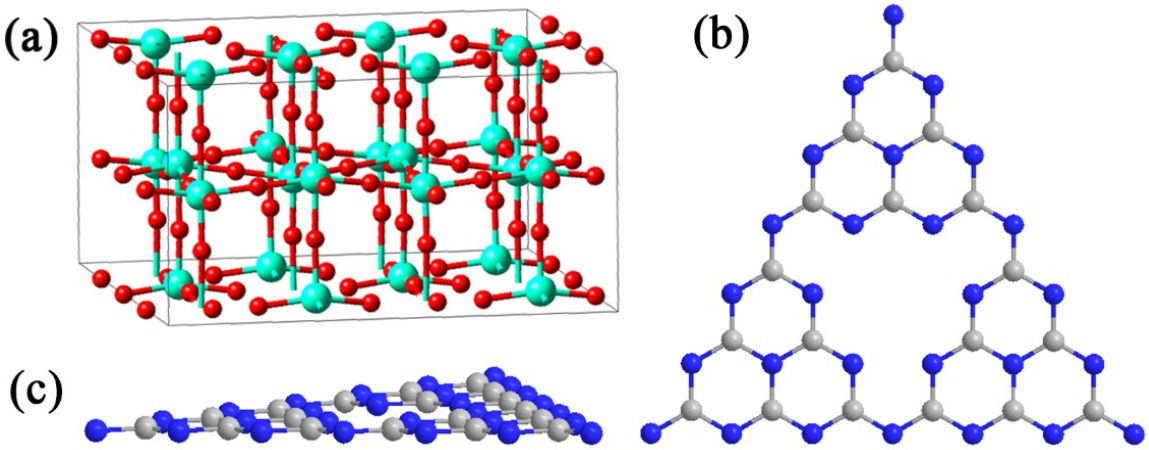


Fig. S7 Crystal structures of monoclinic WO_3 (a) and g-C_3N_4 (b, c).

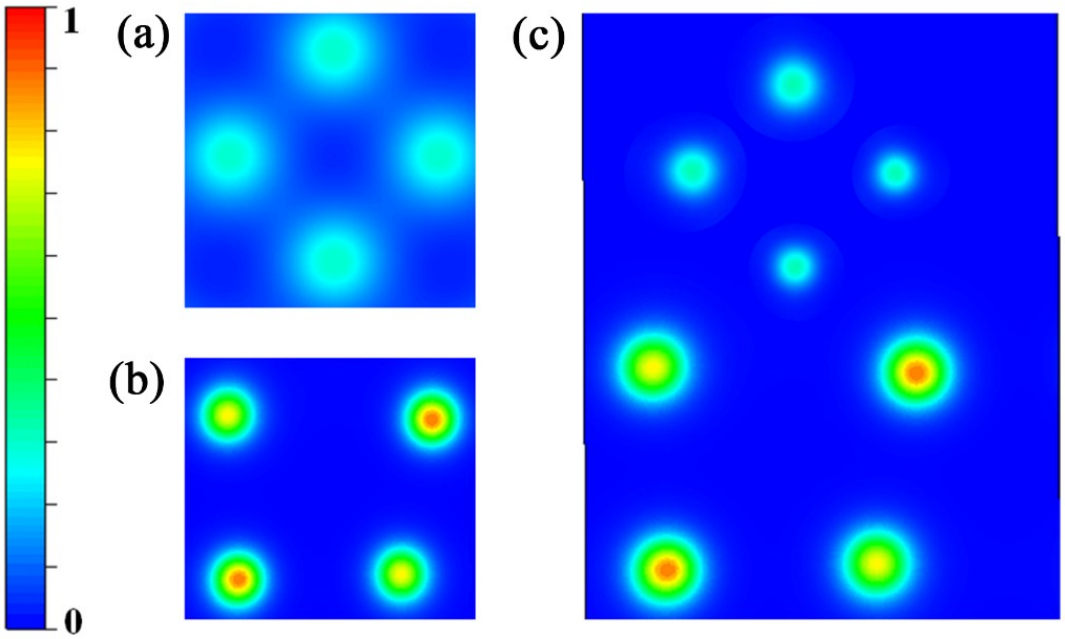


Fig. S8 Electron density maps of WO_3 (a), g-C_3N_4 (b) and WO_3/g-C_3N_4 model. Blue and red represented the most electro-poor and electro-rich regions, respectively.

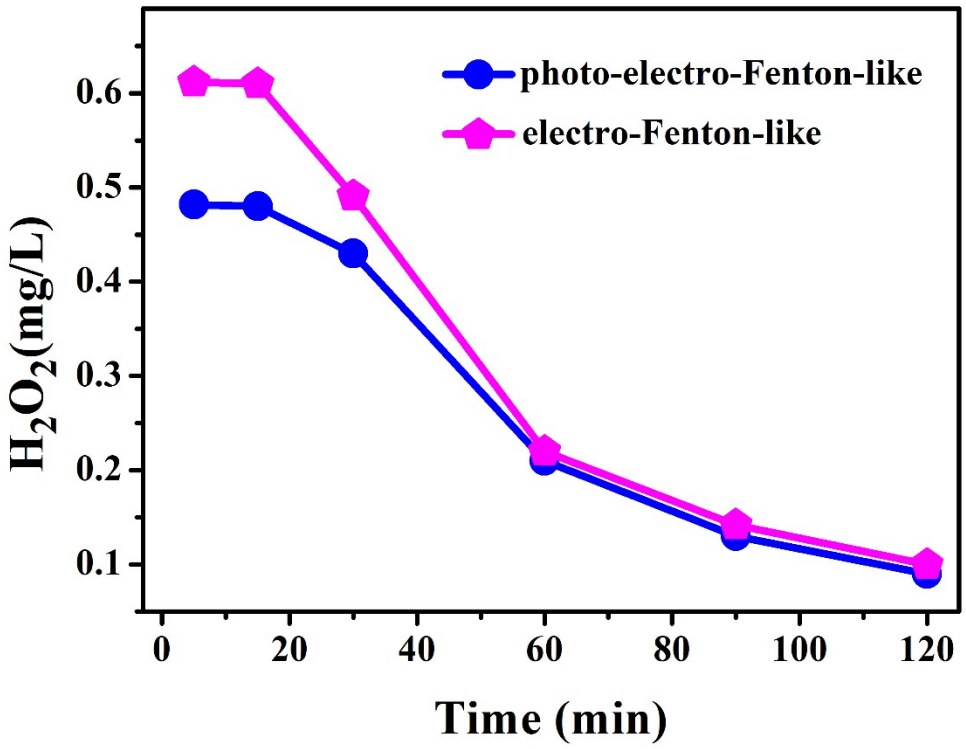


Fig. S9 The concentration of electro-generated H_2O_2 in PEF-like system and EF-like system with WO_3/g-C_3N_4 (1:6).

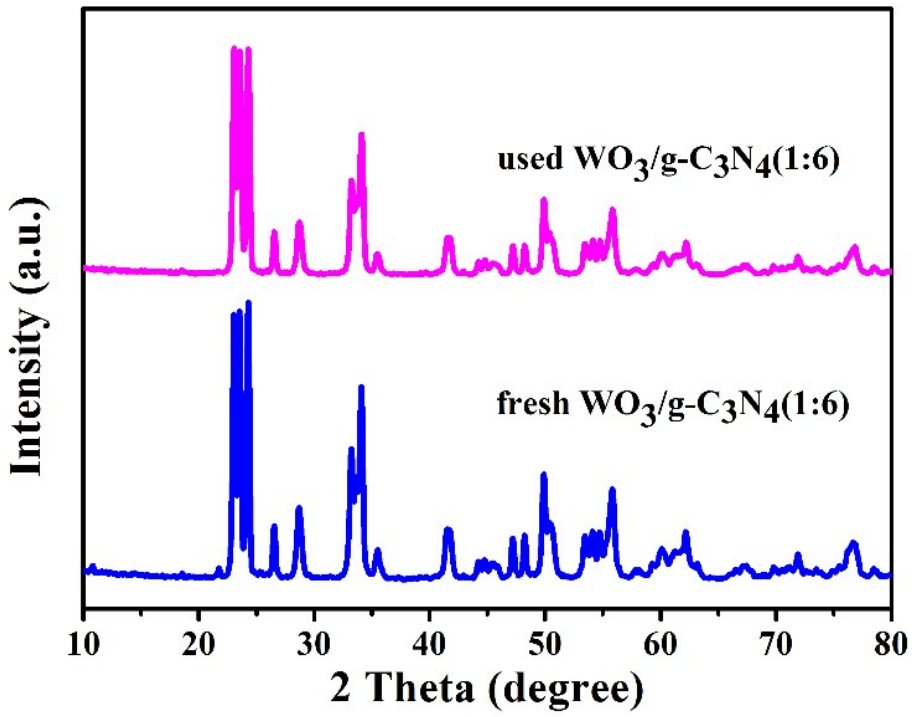


Fig. S10 XRD patterns of fresh and used WO_3/g-C_3N_4 (1:6) in PEF-like system.

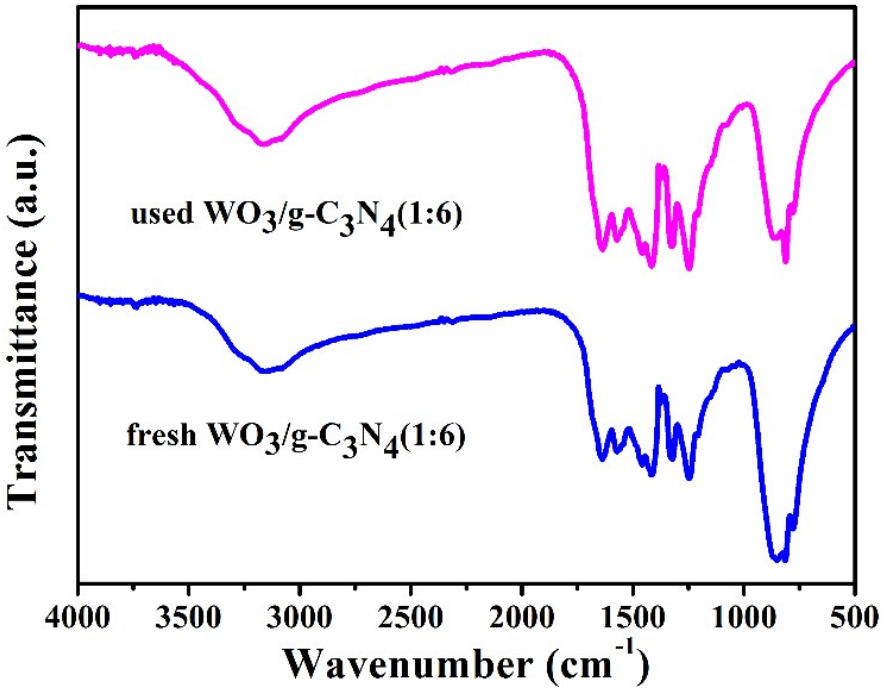
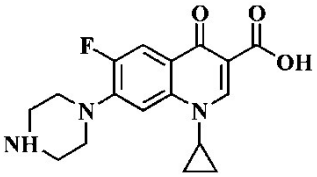


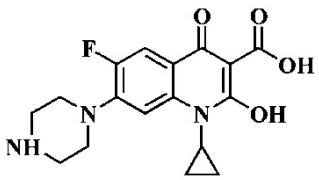
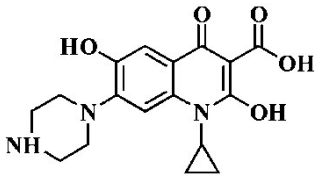
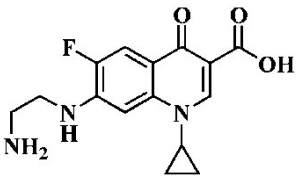
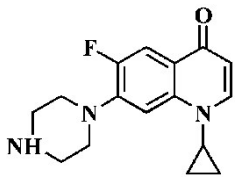
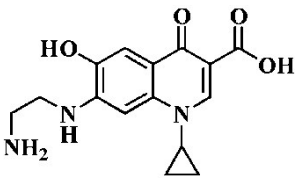
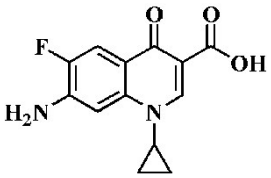
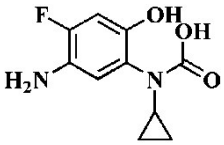
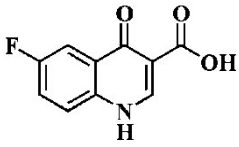
Fig. S11 FT-IR spectrum of fresh and used WO_3/g-C_3N_4 (1:6) in PEF-like system.

Table S1 Summary of the textural parameters of the samples.

Samples	Specific surface area ($m^2.g^{-1}$)	Pore volume ($cm^3.g^{-1}$)	Average pore size (nm)
g-C_3N_4	15.04	0.102	27.36
WO_3	18.63	0.145	31.11
WO_3/g-C_3N_4 (1:6)	26.33	0.101	15.38

Table S2 The intermediates of CIP degradation.

Compounds	Molecular formula	Structural formula	m/z
CIP	$C_{17}H_{18}FN_3O_3$		332

A	$C_{16}H_{18}FN_3O_4$		348
B	$C_{17}H_{19}N_3O_4$		330
C	$C_{15}H_{16}FN_3O_3$		306
D	$C_{16}H_{18}FN_3O$		288
E	$C_{15}H_{17}N_3O_4$		304
F	$C_{13}H_{11}FN_2O_3$		263
G	$C_{10}H_{11}FN_2O_3$		227
H	$C_{10}H_5FNO_3$		204