Supporting Information for

Ultrafine $ZnCo_2O_4$ QDs-incorporated carbon nitride mediated peroxymonosulfate activation for norfloxacin oxidation: performances, mechanisms and pathways

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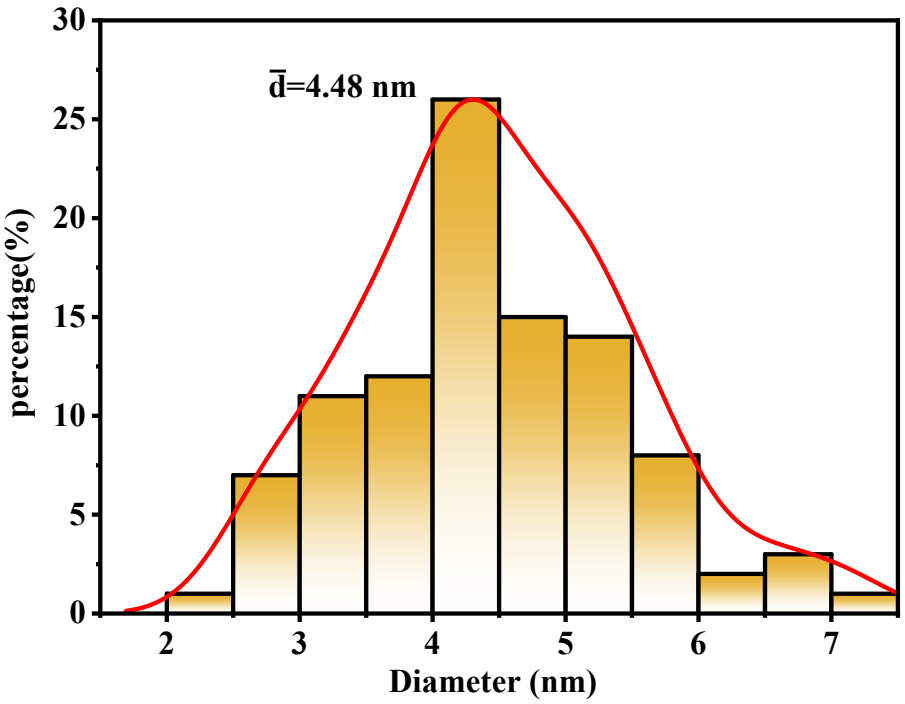


Figure S1. The histogram of $ZnCo_2O_4$ Sizes.

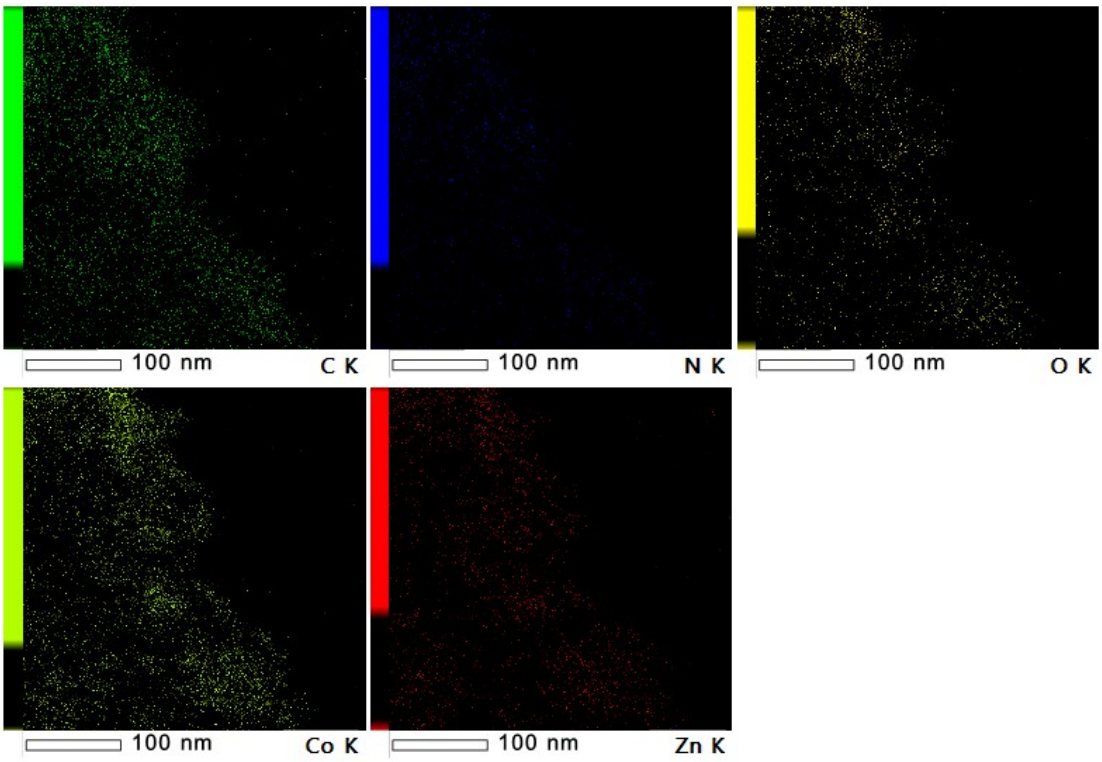


Figure S2. EDS-elemental mapping of $ZnCo_2O_4$/g-C_3N_4.

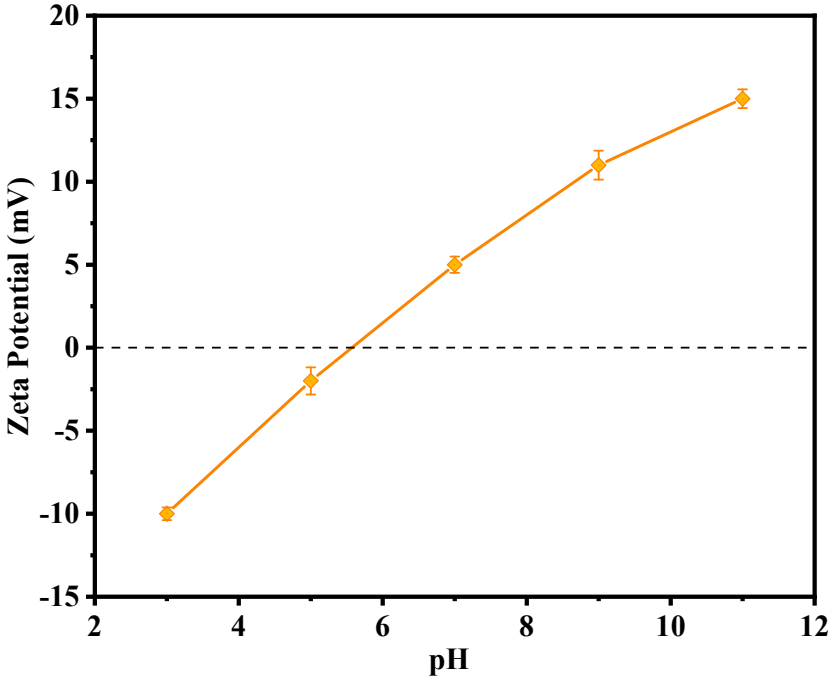


Figure S3. Zeta potential–pH profiles of $ZnCo_2O_4$/g-C_3N_4.

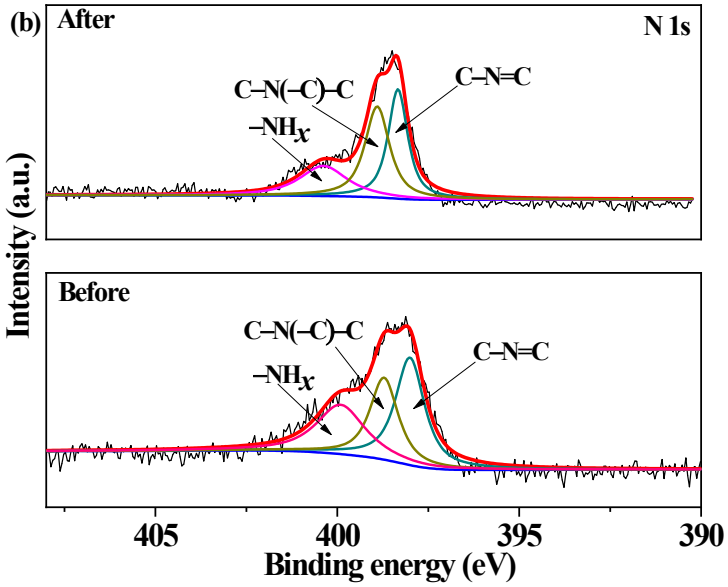
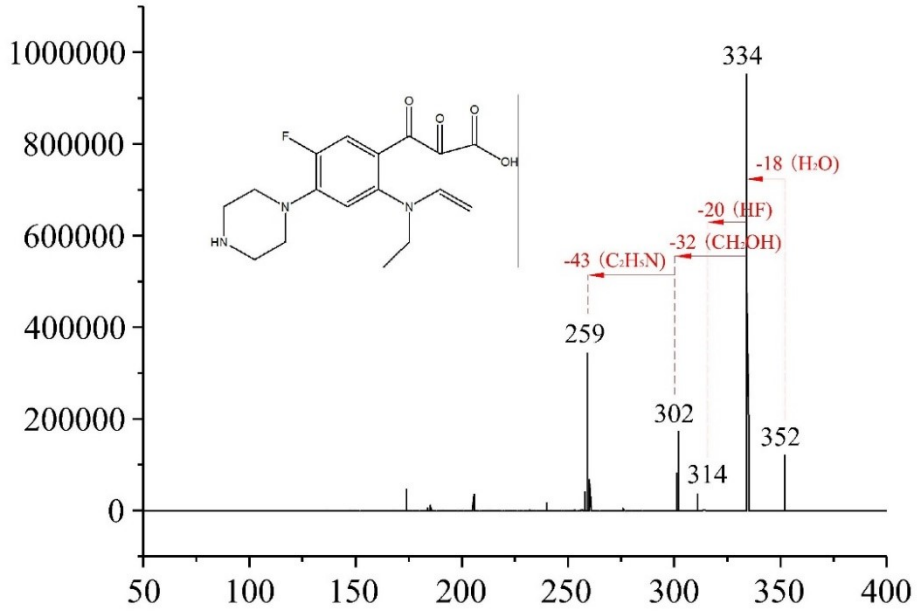


Figure S4. N 1s XPS spectrum before and after reaction

A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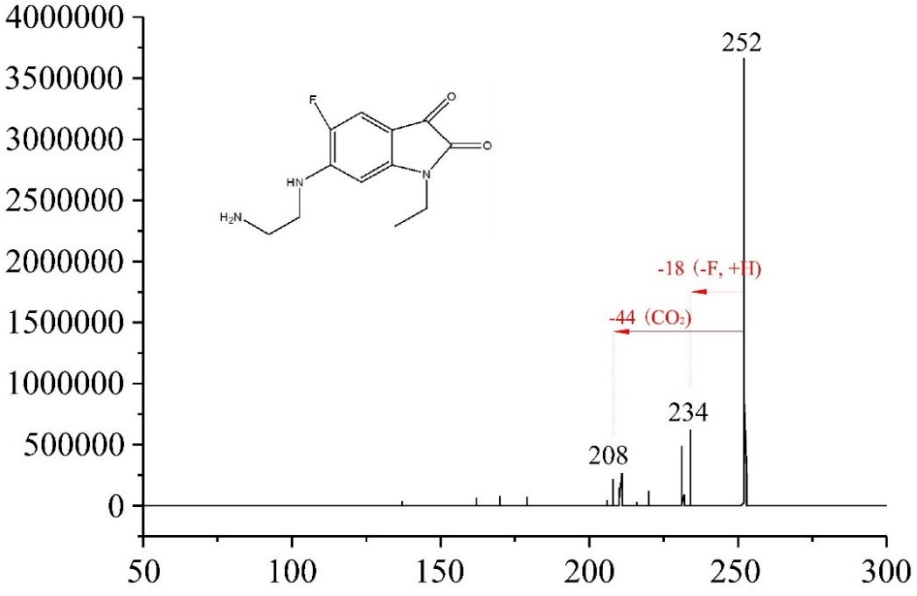
800000
600000
400000
200000
0
50
100
150
200
250
300
350
400
334
259
302
314
352
-18 (H₂O)
-20 (HF)
-32 (CH₃OH)
-43 (C₂H₅N)
F
HN
N
OH

B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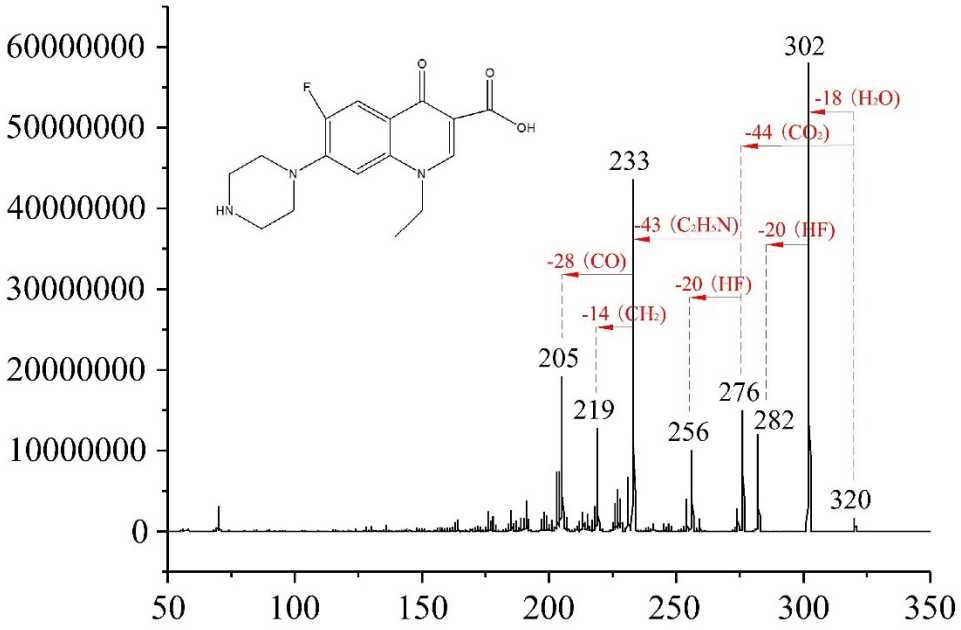
2500000
2000000
1500000
1000000
500000
0
50
100
150
200
250
300
252
234
208
-18 (-F, +H)
-44 (CO₂)
F
HN
H₂N
N

C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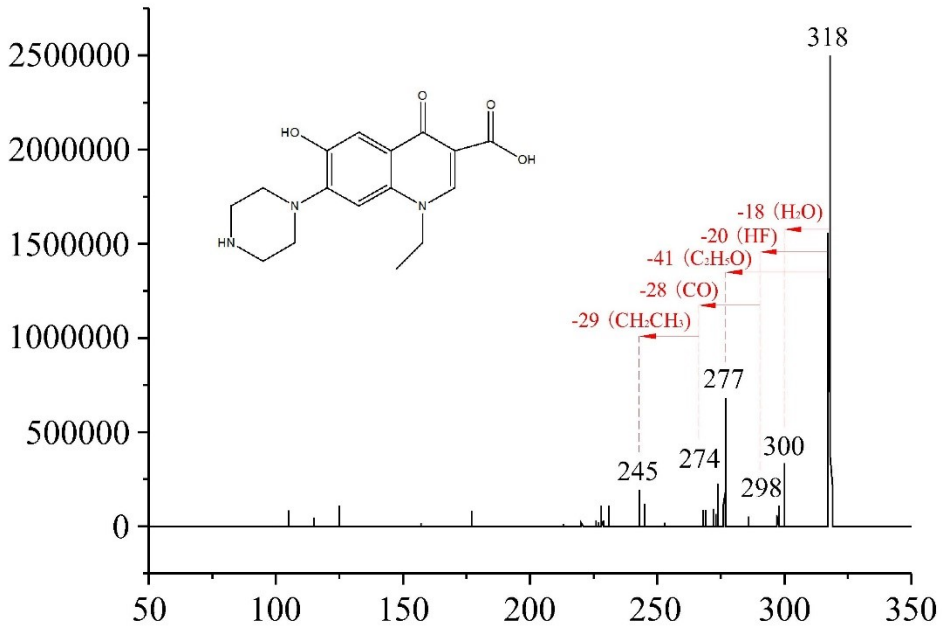
50000000
40000000
30000000
20000000
10000000
0
50
100
150
200
250
300
350
302
-18 (H₂O)
-44 (CO₂)
233
-43 (C₂H₅N)
-20 (HF)
-28 (CO)
-20 (HF)
-14 (CH₂)
205
276
219
256
282
320
F
O
O
OH
HN
N
N

D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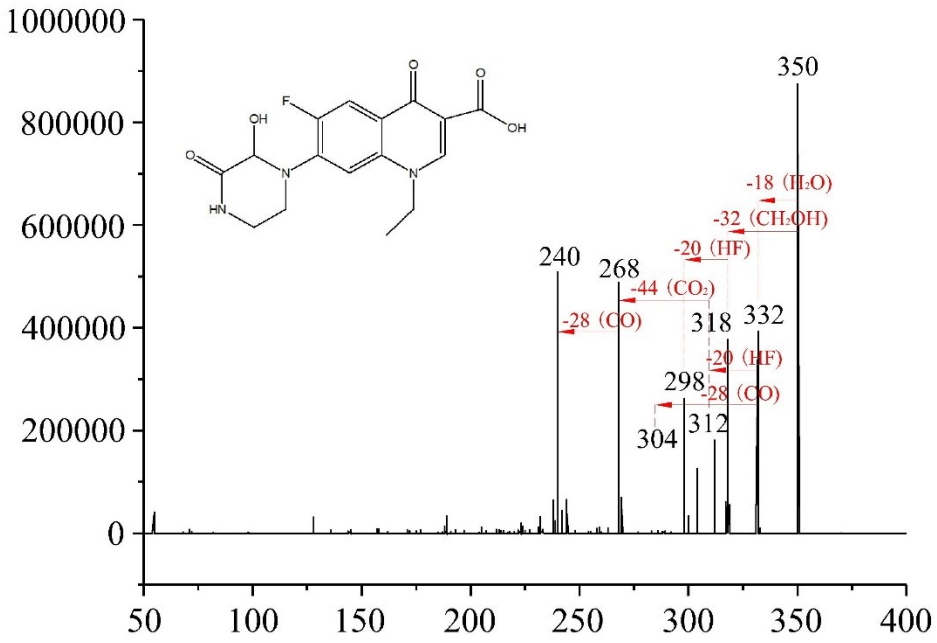
150
200
250
300
350
318
-18 (H₂O)
-20 (HF)
-41 (C₂H₅O)
-28 (CO)
-29 (CH₂CH₃)
277
300
245
274
298
HO
O
O
OH
HN
N
N

E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240
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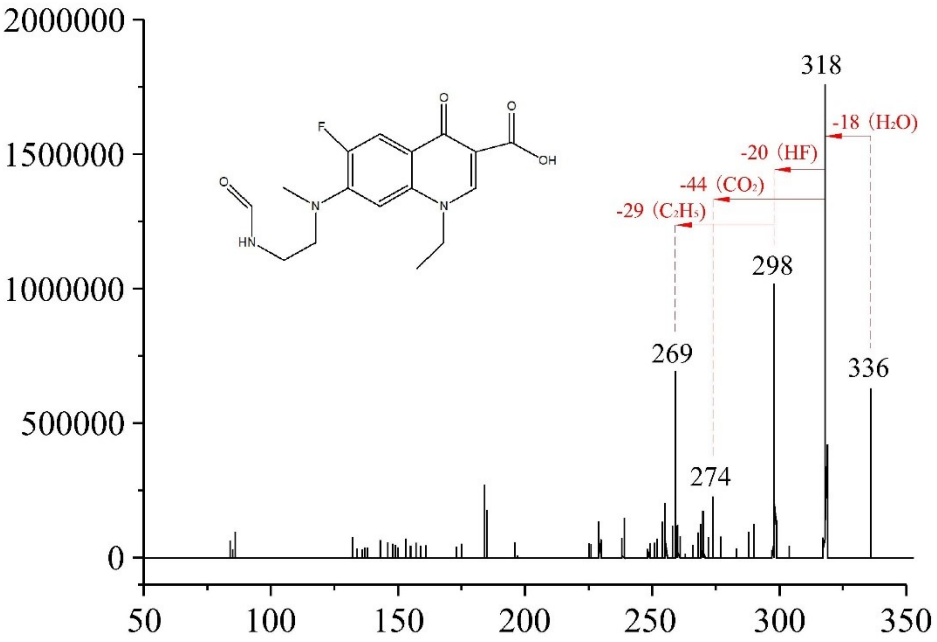
304
312
318
332
-18 (H₂O)
-32 (CH₃OH)
-20 (HF)
-44 (CO₂)
-28 (CO)
-20 (HF)
-28 (CO)
F
OH
O
O
OH
N
N
HN

F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500000
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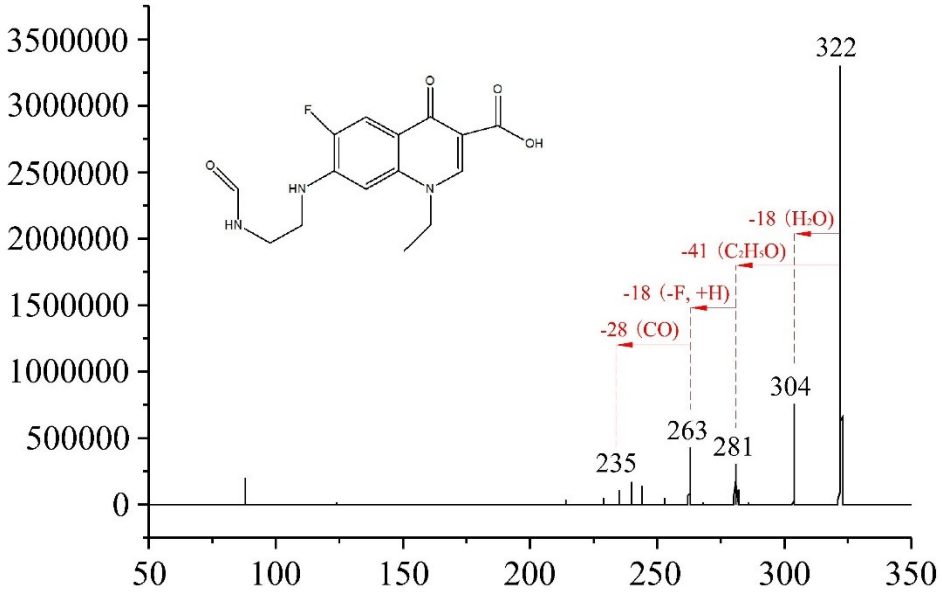
100
150
200
250
300
350
318
298
269
336
274
-18 (H₂O)
-20 (HF)
-44 (CO₂)
-29 (C₂H₅)
F
O
O
OH
N
N
HN
O

G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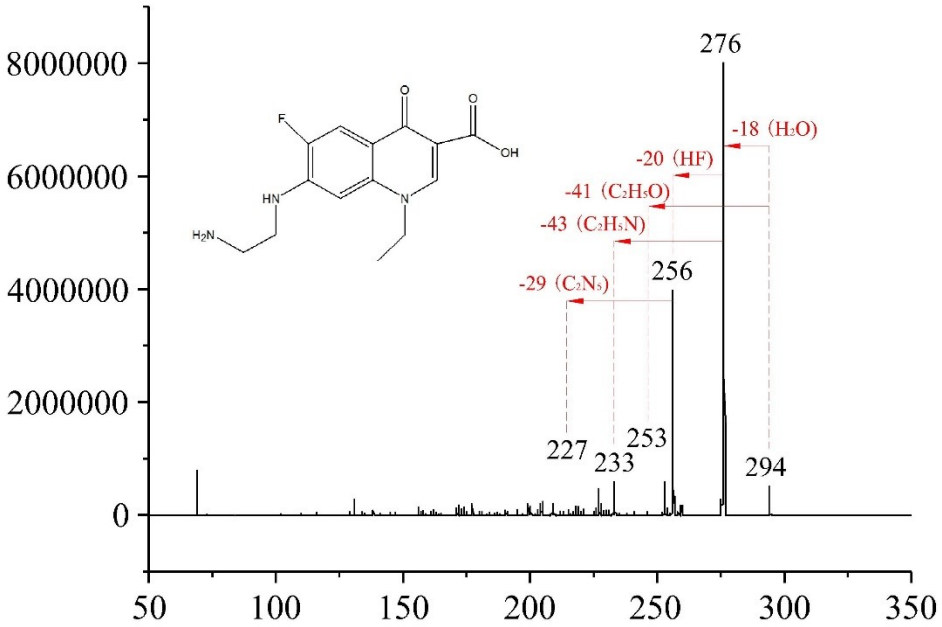
1500000
1000000
500000
0
50
100
150
200
250
300
350
322
304
263
281
235
-18 (H2O)
-41 (C2H5O)
-18 (-F, +H)
-28 (CO)
F
O
OH
HN
N

H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6000000
4000000
2000000
0
50
100
150
200
250
300
350
276
256
294
253
233
227
-18 (H2O)
-20 (HF)
-41 (C2H5O)
-43 (C2H5N)
-29 (C2N3)
F
O
OH
HN
H2N
N

I

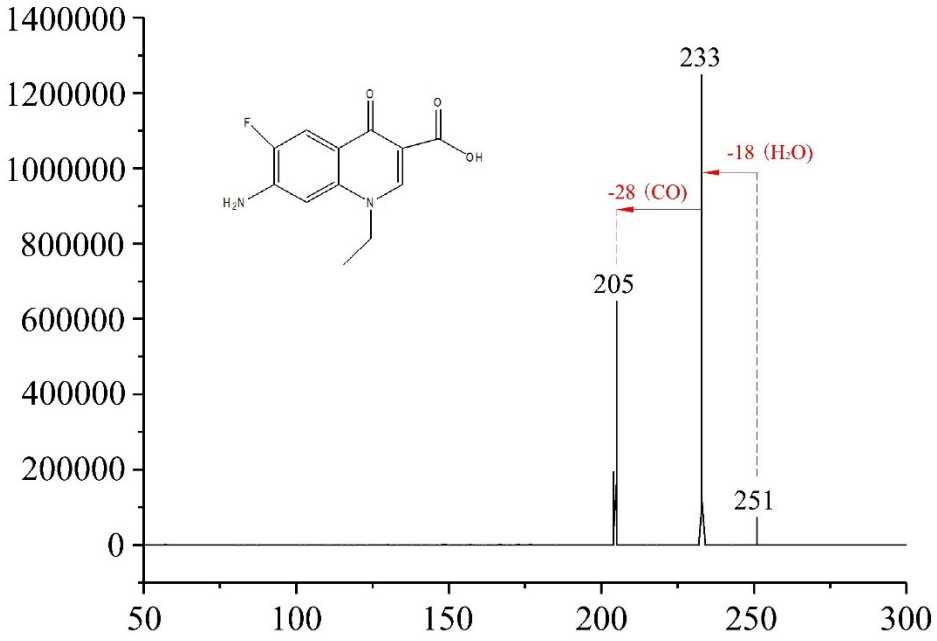
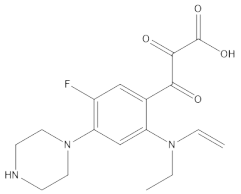
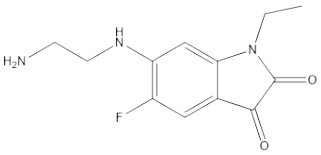
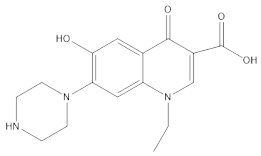
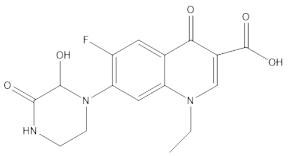
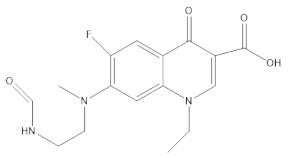
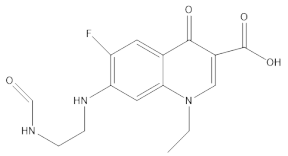
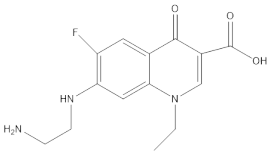
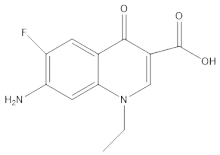


Figure S5. Product ion spectra of NOR (A) and its degradation intermediates (B-I) in the system of MNP/PS, which were determined using HPLC-QqQ-MS/MS, and their proposed fragmentation pathways. Experimental conditions: [NOR] = 15 μM; [PMS] = 0.15 mM; [Catalyst] = 0.2 g/L; pH_0 = 4.0; T = 20 ± 1 °C.

Table S1. Textural properties of the samples.

Catalyst	Surface area (S_{BET}·m^2·g^{-1})	1h removal amount (mmol·L^{-1})	specific activity (mmol·L^{-1}·m^{-2})
g-C_3N_4	69.3924	8.3909	0.12
$ZnCo_2O_4$	82.0304	11.3199	0.1380
$ZnCo_2O_4$/g-C_3N_4	92.1756	16.6903	0.1811

Table S2. Proposed structure of the degradation products of NX.

No.	Molecular formula	Measured (m/z)	Structural formula
1	$C_{17}H_{20}FN_3O_4$	352	
2	$C_{12}H_{14}FN_3O_2$	252	
3	$C_{16}H_{19}N_3O_4$	318	
4	$C_{16}H_{16}FN_3O_5$	350	
5	$C_{16}H_{18}FN_3O_4$	336	
6	$C_{15}H_{16}FN_3O_4$	322	
7	$C_{14}H_{16}FN_3O_3$	294	
8	$C_{12}H_{11}FN_2O_3$	251	
9	$C_7H_5NO_4$	168