

Table S1 The luminescence decay results of TiO₂ NAs, TCN NAs, CQD/TCN NAs, and N, P-CQD/TCN NAs.

Photoelectrode	τ_1 (ns)
TiO ₂ NAs	3.90
TCN NAs	4.08
CQD/TCN NAs	5.04
N, P-CQD/TCN NAs	5.28

Table S2 Condensed Fukui Index distribution on 1,4-D.

Number	Atom	$q_k(N)$	$q_k(N+1)$	$q_k(N-1)$	f^0	f^-	f^+
1	O	-0.19734	-0.25562	-0.01918	0.11822	0.178153	0.058287
2	O	-0.19733	-0.25562	-0.01918	0.118219	0.178152	0.058285
3	C	0.021149	-0.04938	0.079693	0.064536	0.058544	0.070528
4	C	0.021149	-0.04938	0.079694	0.064537	0.058544	0.07053
5	C	0.02115	-0.04937	0.079694	0.064532	0.058543	0.07052
6	C	0.02115	-0.04937	0.079693	0.064533	0.058543	0.070522
7	H	0.030559	-0.03005	0.086759	0.058405	0.056201	0.060609
8	H	0.046958	-0.04277	0.093139	0.067956	0.046181	0.089731
9	H	0.046959	-0.04277	0.093139	0.067955	0.046181	0.08973
10	H	0.030559	-0.03005	0.086759	0.058407	0.0562	0.060613
11	H	0.046959	-0.04276	0.09314	0.06795	0.046181	0.089719
12	H	0.03056	-0.03004	0.086757	0.058399	0.056198	0.060601
13	H	0.046959	-0.04276	0.09314	0.06795	0.046181	0.089719
14	H	0.030559	-0.03005	0.086757	0.058401	0.056198	0.060605

Table S3 Typical organic pollutants in the pretreated pesticide wastewater identified using GC-MS.

Number	Name	Molecular formula	Retention time (min)
1	Phytol	C ₂₀ H ₄₀ O	13.61
2	Butylated Hydroxytoluene	C ₁₅ H ₂₄ O	14.37
3	1-Dodecanol, 2-octyl-	C ₂₀ H ₄₂ O	16.28
4	Ametryn	C ₉ H ₁₇ N ₅ S	21.54
5	Phthalic acid, butyl hept-4-yl ester	C ₁₆ H ₂₂ O ₄	22.12
6	Hexanedioic acid, dioctyl ester	C ₂₂ H ₄₂ O ₄	25.21
7	Bis(2-ethylhexyl) phthalate	C ₂₄ H ₃₈ O ₄	25.90
8	1,3-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	C ₂₄ H ₃₈ O ₄	26.78
9	Cyclotrisiloxane, hexamethyl-	C ₆ H ₁₈ O ₃ Si ₃	26.99

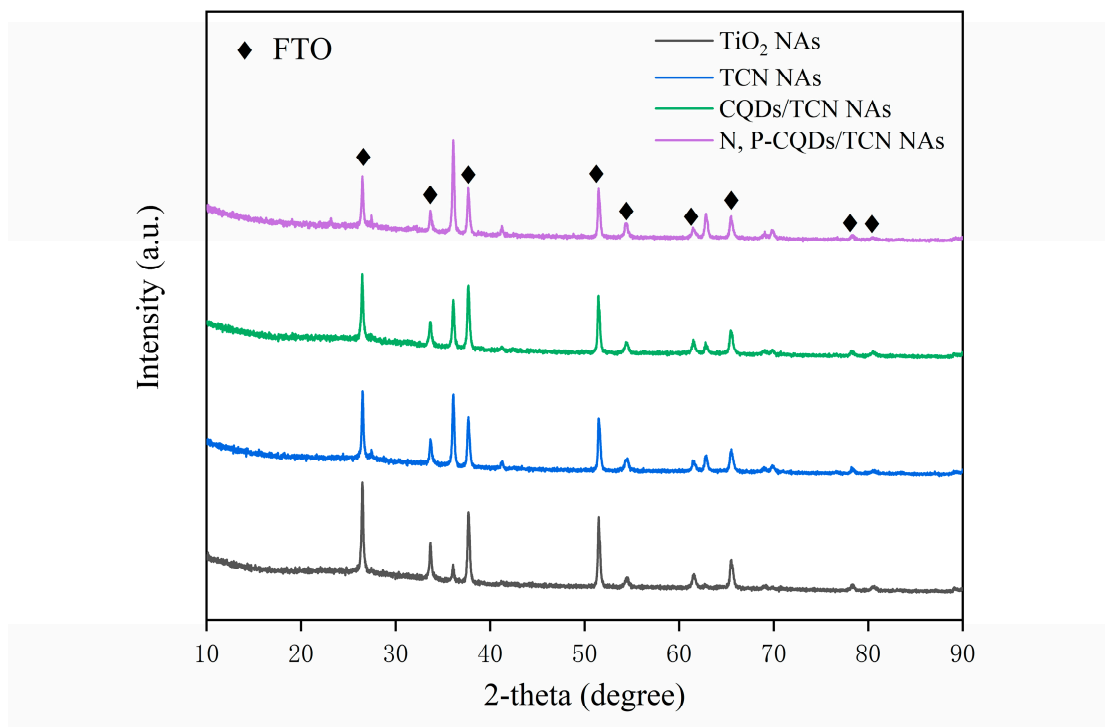


Figure S1 XRD results of TiO₂ NAs, TCN NAs, CQD/TCN NAs, and N, P-CQD/TCN NAs.

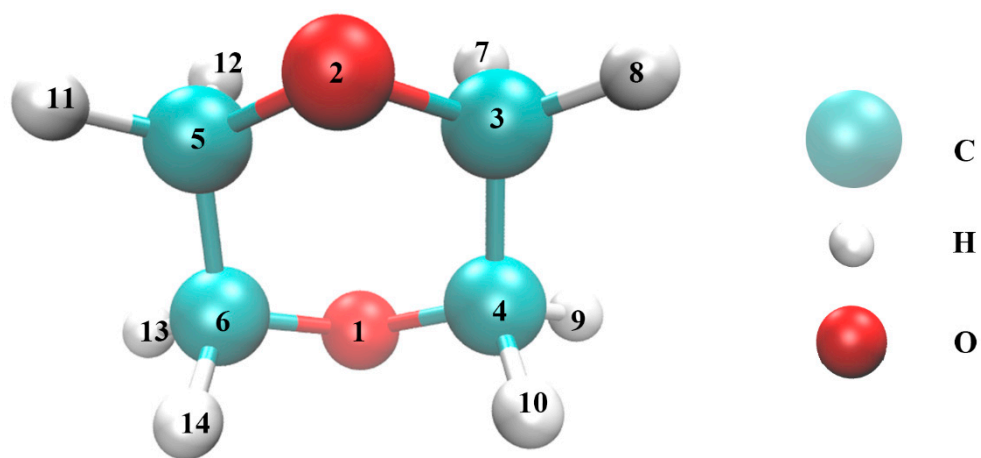


Figure S2 Structural formula of 1,4-D optimized using DFT.

RT: 0.00 - 38.52

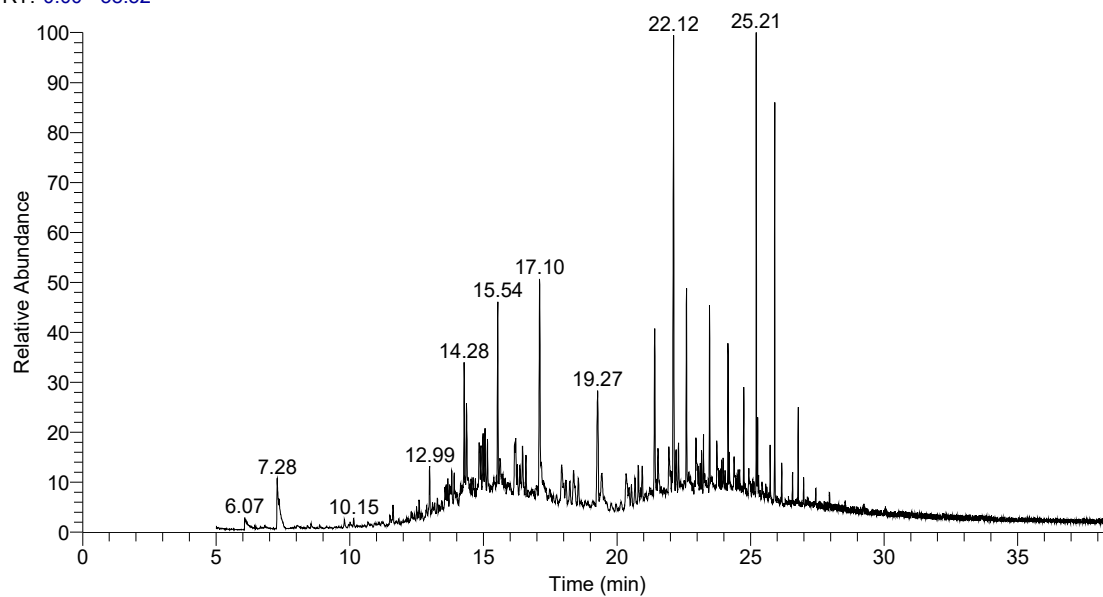


Figure S3 Mass spectrometry results of the GCMS analysis on the pretreated pesticide wastewater.