

**Role of inorganic ions and dissolved natural organic matters on
persulfate oxidation of acid orange 7 with zero-valent iron**

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Table S1. Initial and final pH of reaction solutions containing inorganic anions.

Inorganic anions	Cl ⁻	ClO ₄ ⁻	SO ₄ ²⁻	NO ₃ ⁻	NO ₂ ⁻	CH ₃ COO ⁻	HCO ₃ ⁻	CO ₃ ²⁻	H ₂ PO ₄ ⁻	HPO ₄ ²⁻
Initial pH	2.98	2.97	3.35	2.96	4.79	6.24	9.70	11.15	3.71	8.40
Final pH	3.46	3.02	3.32	2.79	4.19	3.85	3.61	3.32	3.72	3.57

Table S2. Initial and final pH of reaction solutions containing organic matters.

Organic matters	HA	EDTA
Initial pH	2.97	4.23
Final pH	2.87	4.06

Table S3. Pseudo-first-order rate constants for PS oxidation of AO7 in the presence of various concentrations of nitrite ions

C _{NO₂} (mM)	K _{obs} (min ⁻¹)	Half-life, t _{1/2} (min)	R ²
0	0.048	19.8	0.963
10	0.004	170.8	0.995
30	0.001	689.6	0.979
50	0.001	690.1	0.990
70	0.002	347.5	0.983
100	0.002	345.1	0.977

Table S4. Pseudo-first-order rate constants for PS oxidation of AO7 in the presence of various concentrations of perchlorate ion

$C_{\text{ClO}_4^-}$ (mM)	K_{obs} (min^{-1})	Half-life, $t_{1/2}$ (min)	R^2
0	0.048	19.8	0.963
10	0.067	8.5	0.964
30	0.06	10.7	0.949
50	0.074	7.4	0.964
70	0.056	13.8	0.981
100	0.05	18.6	0.977

Table S5. Pseudo-first-order rate constants for PS oxidation of AO7 in the presence of various concentrations of acetate ion

$C_{\text{CH}_3\text{COO}^-}$ (mM)	K_{obs} (min^{-1})	Half-life, $t_{1/2}$ (min)	R^2
0	0.048	19.8	0.963
10	0.064	10.2	0.993
30	0.058	11.5	0.996
50	0.055	12.7	0.999
70	0.03	22.2	0.998
100	0.028	21.8	0.989

Table S6. Pseudo-first-order rate constants for PS oxidation of AO7 in the presence of various concentrations of humic acid

$C_{\text{HA}}(\text{mg/L})$	$K_{\text{obs}} (\text{min}^{-1})$	Half-life, $t_{1/2}(\text{min})$	R^2
0	0.048	19.8	0.963
0.5	0.101	7.6	0.989
1	0.105	7.0	0.971
5	0.049	19.0	0.976
7.5	0.041	23.6	0.996
10	0.045	21.8	0.992

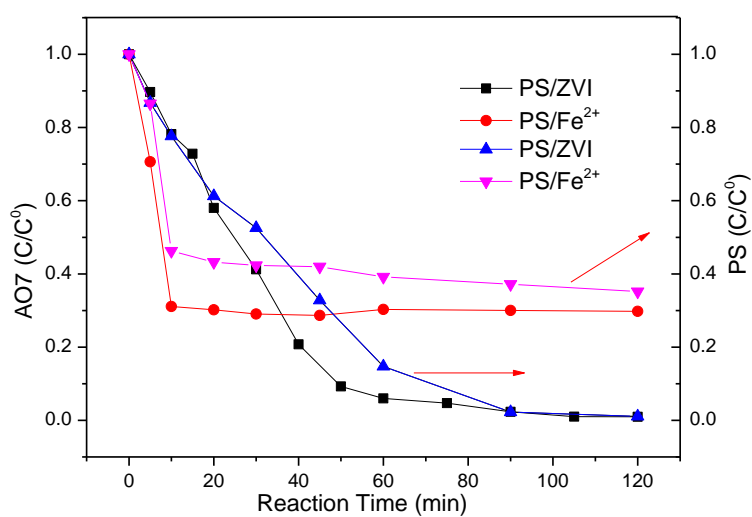


Fig. S1. The decomposition of AO7 and PS under PS/ZVI and PS/Fe²⁺ systems. Experiment condition: PS = 2 mM; AO7 = 0.2 mM; ZVI = 0.5 g/L; FeSO₄ · 7H₂O = 2.48 g/L; pH = 3.8 ± 0.1; T = 25 °C