Supplementary Information

Pilot-scale ultrastable nitritation in municipal wastewater based on the loading rate switch strategy

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Supplementary Figure 2: Typical variation in the substance concentrations. **a**, Variation in the nitrogen (NH_4^+-N, NO_2^--N, NO_3^--N and TIN), chemical oxygen demand (COD) and nitrite accumulation ratio (NAR). **b**, Variation in DO concentration, polyhydroxyalkanoates (PHAs), poly-β-hydroxybutyrate (PHB), poly-β-hydroxyvalerate (PHV) and Glycogen in which the concentration of PHAs was equal to the sum of the concentrations of PHB and PHV.

Supplementary Table 1: Comparison of "Fresh Start" concept-based nitritation and selective elimination concept-based nitritation in low-ammonium municipal wastewater treatments.

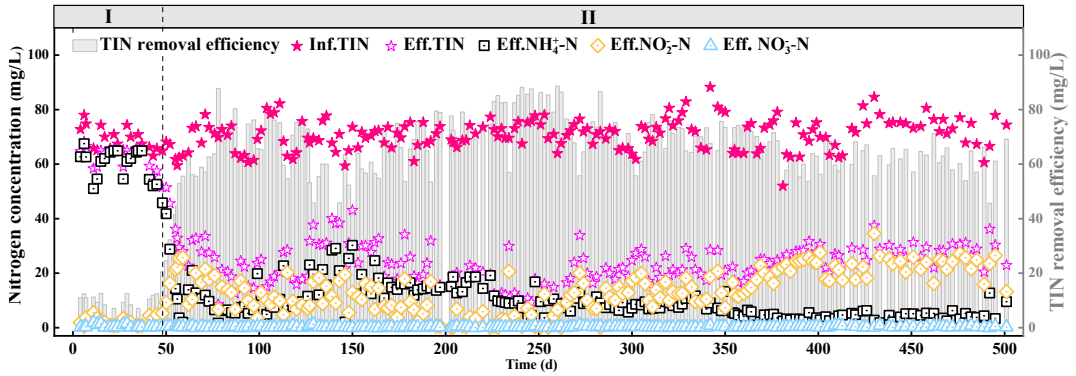
NO.	Concept	Strategy	Initiation time (d)	Control	Scale (L)	T (°C)	NAR (%)	References
1	Fresh Start	Loading rate switch	7	NH_4^+-N	6500	5.9–29.8	>98	This study
2	Selective Elimination	Intermittent aeration	>50	NH_4^+/NO_2^-, COD, SRT	340	25	30–80	12
3	Selective Elimination	Real-time control	>60	pH, SRT	54000	11.9–26.5	>95	29
4	Selective Elimination	Low DO	45	DO, SRT, Temperature	300	21±1	20–95	30
5	Selective Elimination	Low SRT	>100	SRT, Temperature	60	15±1	>90	31
6	Selective Elimination	Hydroxylamine	19	pH, Temperature, SRT	10	25±1	>95	32
7	Selective Elimination	FA	50	Temperature, SRT, DO	4	22±1	15–92	33
8	Selective Elimination	FNA	28	Temperature, SRT	32	25±1	10–78	34

Supplementary Table 2: Operation phase and condition of the reactor.

Phase	Time (day)	Operation mode	Aeration time (h)	DO (mg/L)	T (°C)	MLSS (mg/L)	SRT (day)
I	0–48	An/O	1–3	1–3	20–30	2477–4200	15
II	49–501	An/O/A	2–8	2–8	5.9–30	2500–5031	>200

Supplementary Table 3: Experimental conditions for the batch tests.

Bath	Phase	Time (d)	Residual NH_4^+-N (mg/L)	T (°C)
Parent reactor	A/B	1–63	10±2	27±1.5
Experimental reactor	A	1–31	<1	27±1.5
	B	32–63	10±2	



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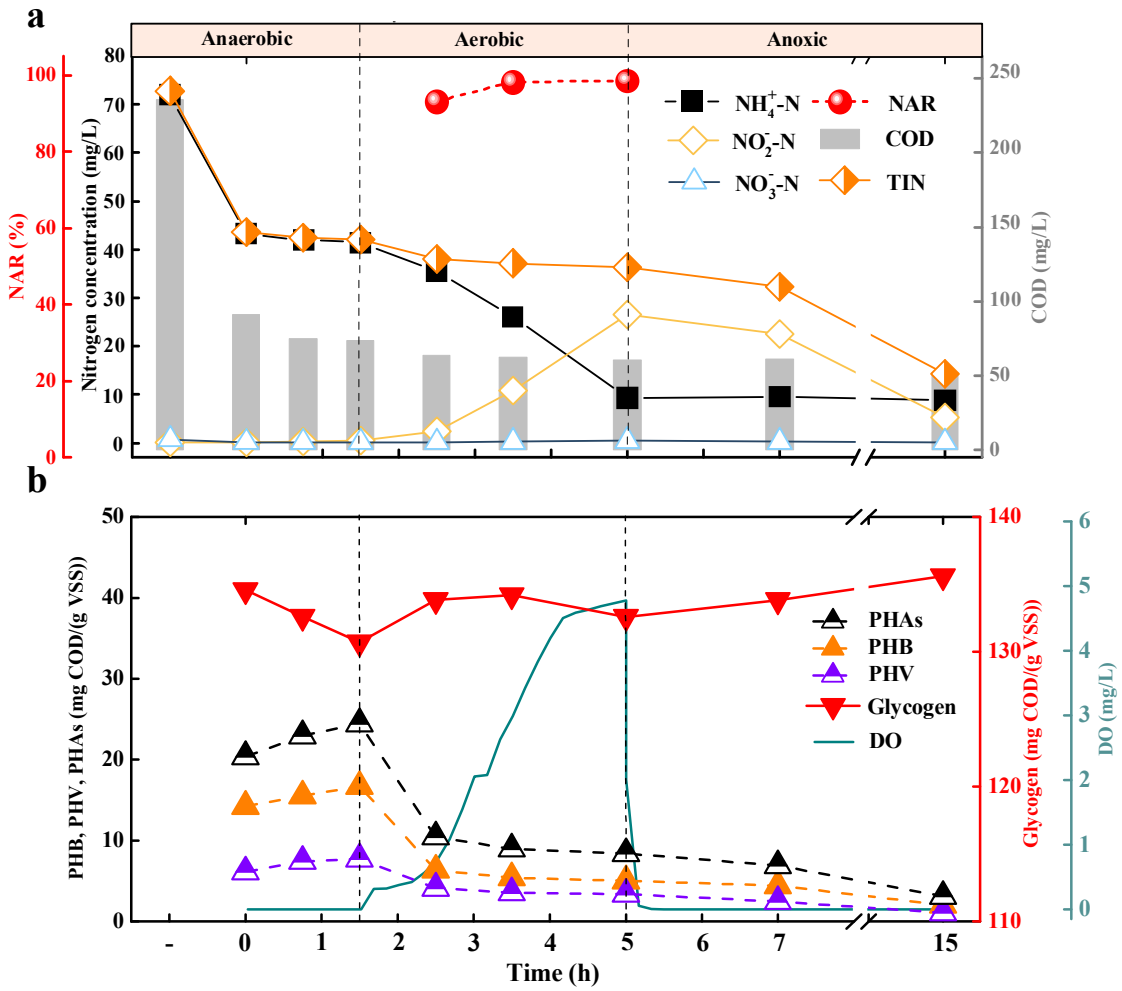

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