

Supporting information

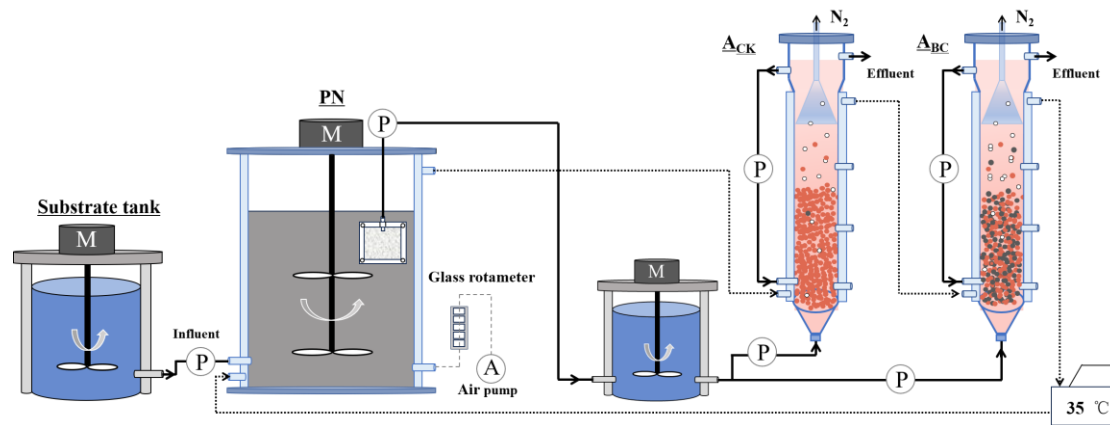


Fig. S1 Schematic of the PN/A process.

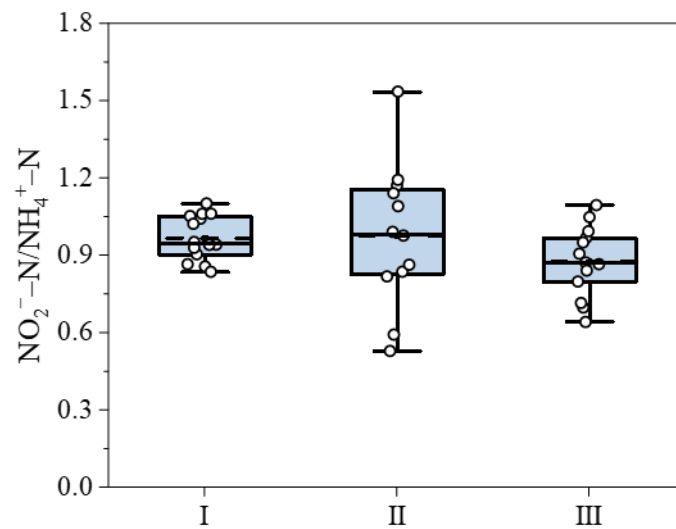


Fig. S2 The effluent $\text{NO}_2^- \text{-N} / \text{NH}_4^+ \text{-N}$ ratio of PN system.

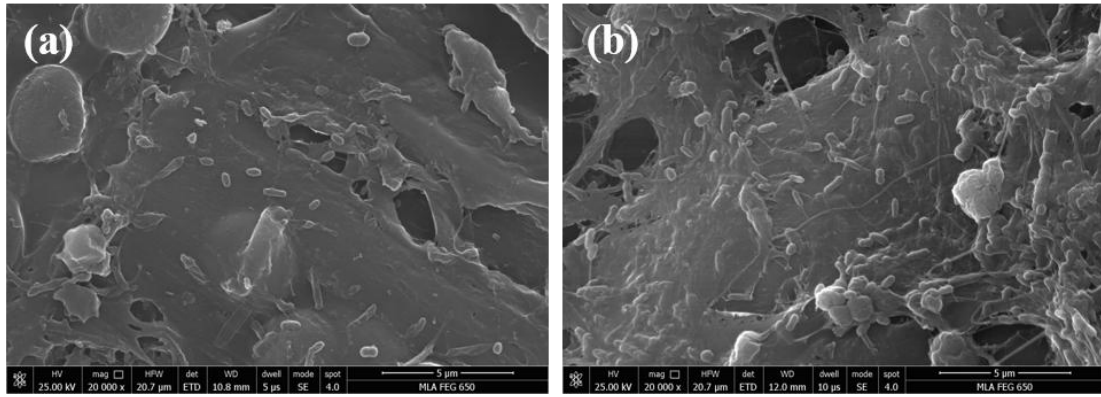


Fig. S3 SEM images of the biochar surface: (a) end of stage I; (b) end of stage III.

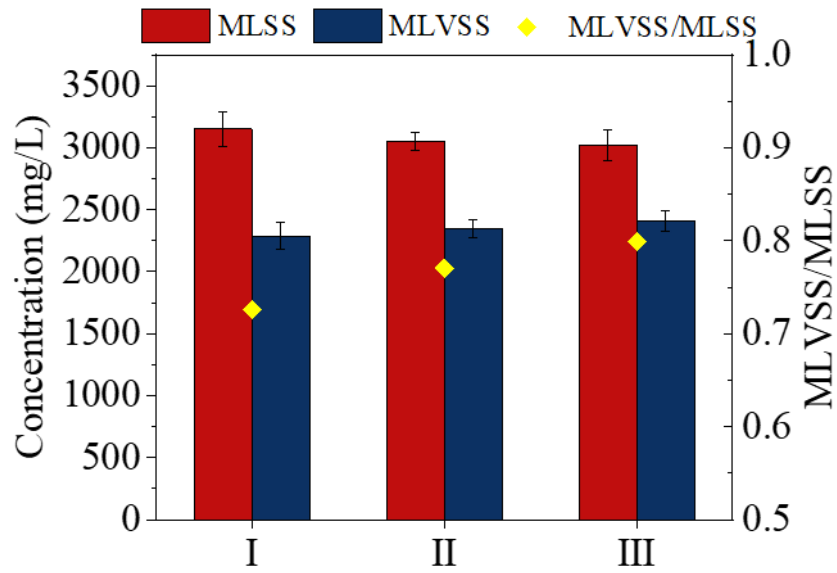


Fig. S4 Biomass change in PN system.

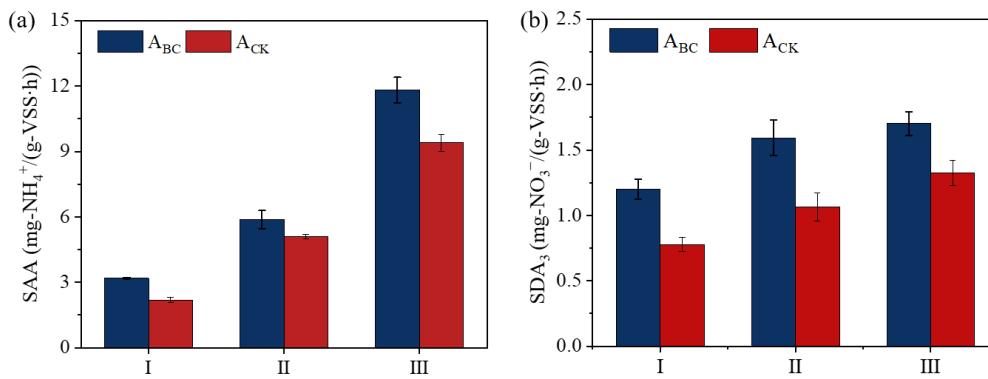


Fig. S5 (a) SAA changes at different stages; (b) SDA₃ changes at different stages.

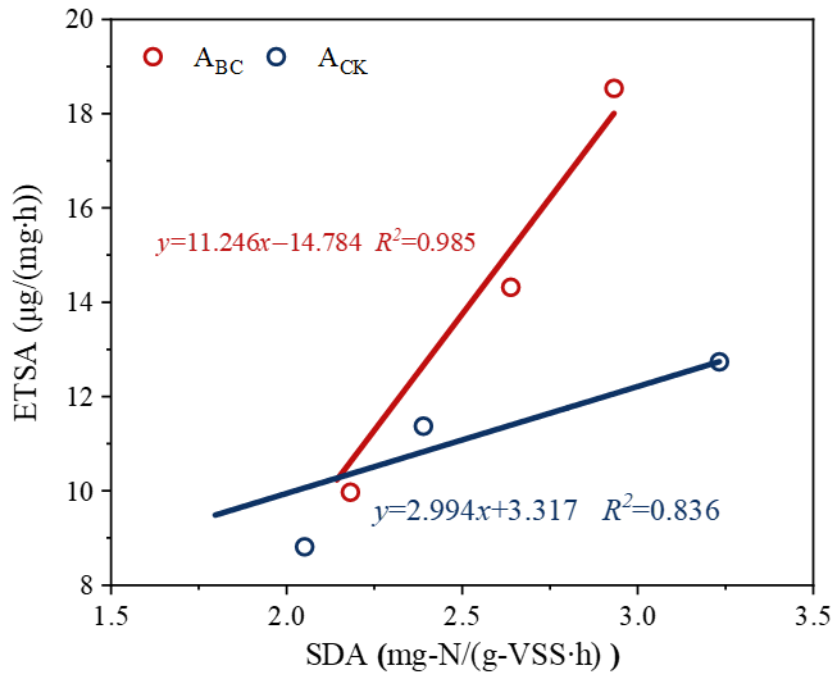


Fig. S6 Correlation analysis between ETSA and SDA.

Table S1 Alpha diversity index of the anammox.

sample	sobs	ACE	Chao	Shannon	Simpson	Coverage	
A _{BC} -suspended	I	534	596.86	606.82	3.92	0.07	1.00
	II	525	589.34	578.40	3.43	0.11	1.00
	III	519	618.16	628.25	3.27	0.13	1.00
A _{CK} -suspended	I	462	528.72	514.44	3.28	0.12	1.00
	II	471	527.67	526.79	3.22	0.14	1.00
	III	518	608.74	606.16	3.06	0.16	1.00
A _{BC} -biofilm	I	627	683.61	673.36	4.47	0.03	1.00
	II	543	631.12	623.65	3.87	0.07	1.00
	III	564	634.49	641.00	3.71	0.14	1.00