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Supporting Information

Microbial Selenate Detoxification Linked to Elemental Sulfur Oxidation: Independent and Synergic Pathways

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This supporting information contains:

number of pages: 10

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Table S1. Primers with sequences of functional genes used in the present study.

Genes	Primers	Primer sequences (5'→3')	Function	References
<i>serA</i>	serAF	CCGCTCAAGTCCTATCCCTAC	Se(VI) reduction	Wen et al., 2016
	serAR	ATACTCGCTCACCTGCTCCTC		
<i>tatC</i>	SLDTatB-F	CCCGGTGGTGAAAAATAGTGAAG	Se(VI) reduction	Ma et al., 2007
	638TatD-R	GATGGACTCCCGCCGTTGAC		
<i>napA</i>	napAV17f	TGGACVATGGGYTTYAAAYC	NO ₃ ⁻ reductase	Bru et al., 2007
	napA4r	ACYTCRCGHGCVGTRCCRCA		
<i>nirS</i>	nirScd3aF	GT(C/G)AACGT(C/G)AAGGA(A/G)AC(C/G)GG	NO ₂ ⁻ reductase	Throbäck et al., 2004
	nirSR3cd	GA(C/G)TTC GG(A/G) TG(C/G)GTCTTGA		
<i>soxB</i>	soxB693F	ATCGGNCARGCNTTYCCNTA	S(-II) oxidation	Meyer et al., 2007
	soxB1164B	AARTTNCCNCGNCGRTA		

Table S2. Bacterial richness and diversity of inoculum and bioreactors.

Sample ID	Reads	OTU	Ace	Chao1	Shannon	Simpson	Coverage
Inoculum	66094	4031	4826	4769	6.97	0.0025	0.98
Stage 1	74258	4086	4791	4713	6.80	0.0041	0.99
Stage 2	73714	2833	3952	3852	4.06	0.13	0.99
Stage 3	67683	1334	3243	2448	1.88	0.52	0.99
Stage 4	48117	2362	4758	3669	4.32	0.065	0.98
Stage 5	41047	2594	3776	3706	5.29	0.046	0.97

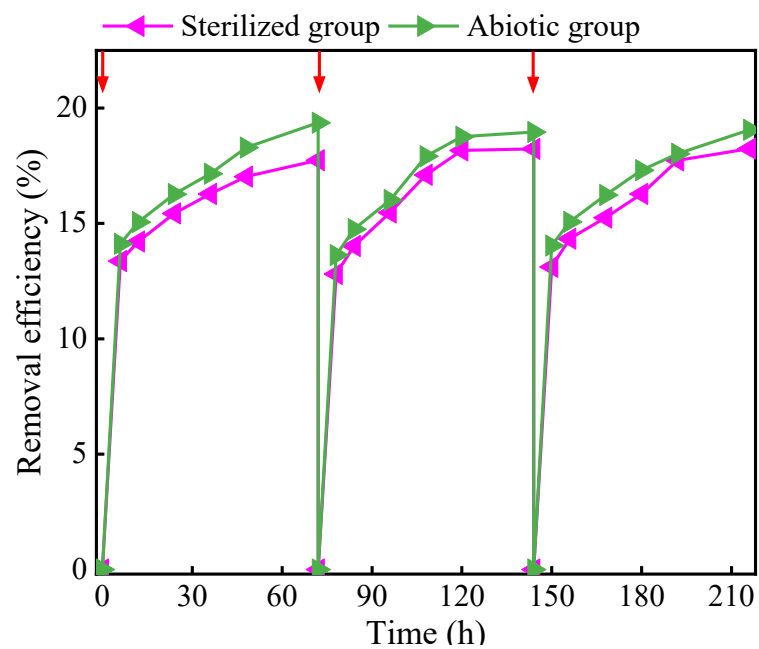


Fig. S1. Time histories of Se(VI) concentration during three consecutive operating cycles in batch trial (Sterilized group and Abiotic group). Red arrows indicate replacement of synthetic groundwater.

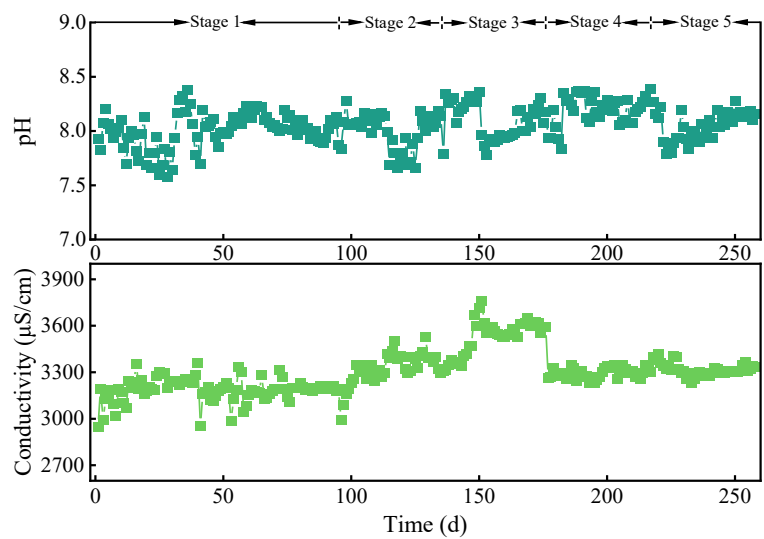


Fig. S2. Time histories of pH and conductivity during 258 d operation of the column trial.



Fig. S3. Images of bioreactor before and after the experiment.

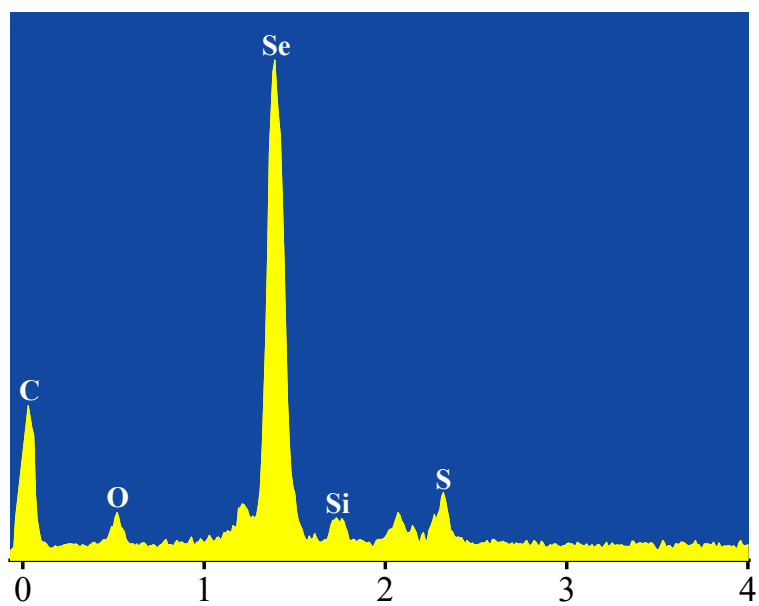


Fig. S4. EDS analysis of precipitates after reaction. EDS: Energy Dispersive Spectrometer.

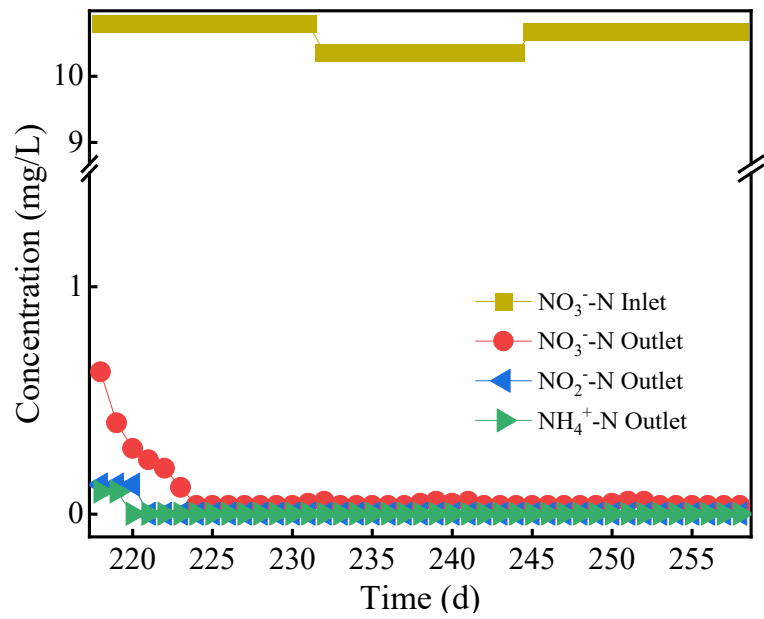


Fig. S5. Concentration of NO₃⁻-N in influent, and concentrations of NO₃⁻-N, NO₂⁻-N and NH₄⁺-N in effluent.

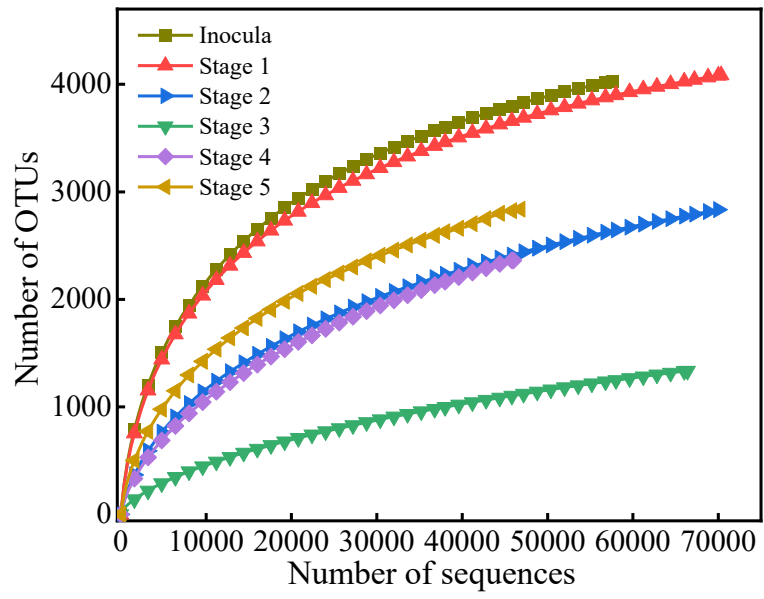


Fig. S6. Rarefaction curves of species abundance in inoculated sludge and post-treated samples.

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