Supplementary Material

Shortcut Biological Nitrogen Removal (SBNR) in an MFC Anode Chamber under Microaerobic Conditions: The Effect of C/N Ratio and Kinetic Study

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FigureS1
(a) H-Type Microbial Fuel Cell configuration and (b) experimental set-up.

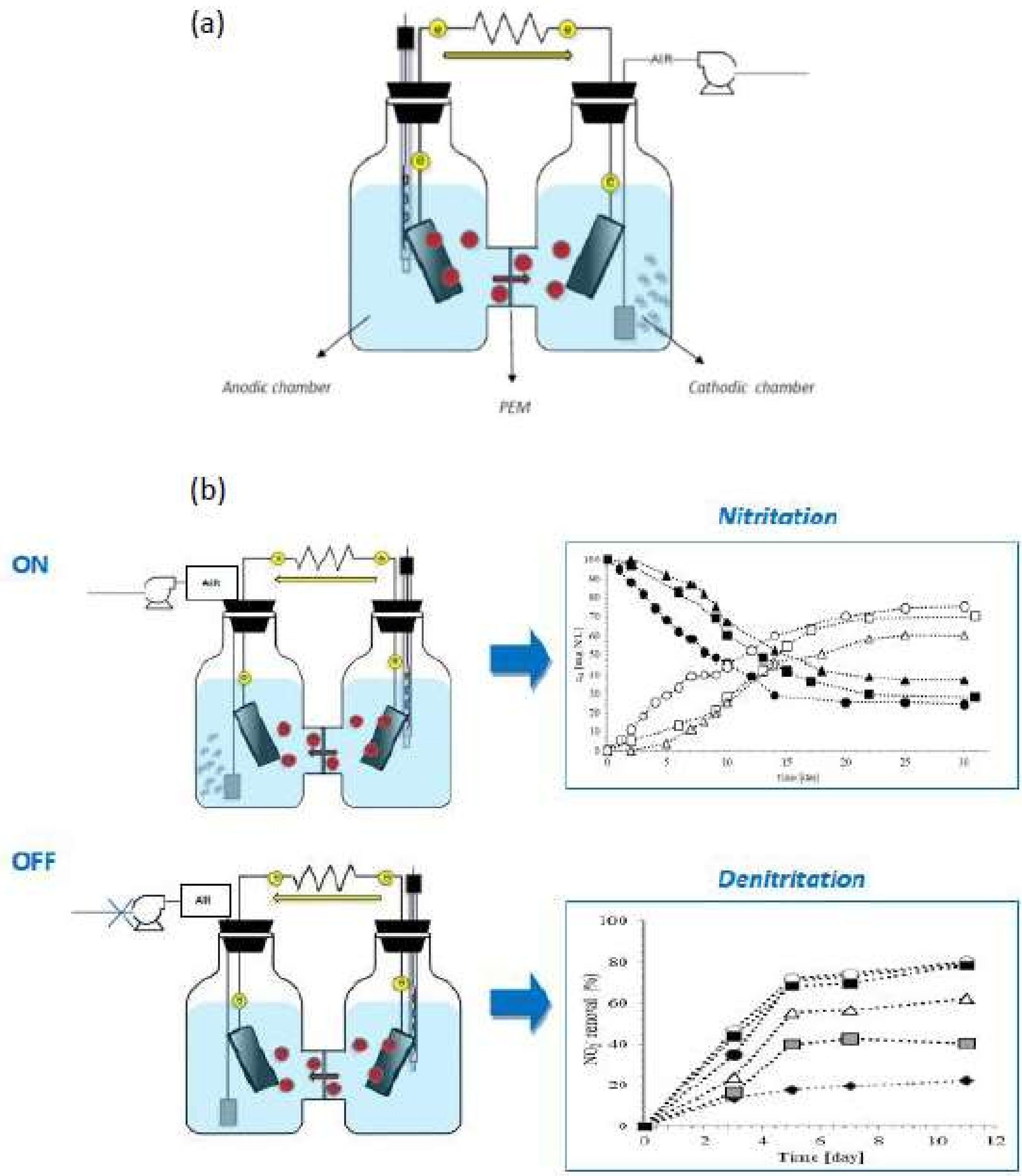

Table S2
Double Type Model expression.

Double Type Model		Equation
Monod – Monod	MM	$\frac{dS_N}{dt} = \mu^{**}\left(\frac{S_N}{k_N + S_N}\right)\left(\frac{S_C}{k_C + S_C}\right)$
Monod – Blackman	MB	$\frac{dS_N}{dt} = \mu^{**}\left(\frac{S_N}{k_N + S_N}\right)\left(\frac{S_C}{2k_C}\right)$
Blackman – Blackman	BB	$\frac{dS_N}{dt} = \mu^{**}\left(\frac{S_N}{2\,k_N}\right)\left(\frac{S_C}{2k_C}\right)$
Blackman – Monod	BM	$\frac{dS_N}{dt} = \mu^{**}\left(\frac{S_N}{2\,k_N}\right)\left(\frac{S_C}{k_C + S_C}\right)$
Monod – Tessier	MT	$\frac{dS_N}{dt} = \mu^{**}\left(\frac{S_N}{k_N + S_N}\right)(1 - e^{-\frac{S_C}{k_C}})$
Tessier- Monod	TM	$\frac{dS_N}{dt} = \mu^{**}\,(1 - e^{-\frac{S_N}{k_N}})\left(\frac{S_C}{k_C + S_C}\right)$
Blackman – Tessier	BT	$\frac{dS_N}{dt} = \mu^{**}\left(\frac{S_N}{2\,k_N}\right)\;(1 - e^{-\frac{S_C}{k_C}})$
Tessier- Blackman	TB	$\frac{dS_N}{dt} = \mu^{**}\,(1 - e^{-\frac{S_N}{k_N}})\left(\frac{S_C}{2k_C}\right)$
Tessier – Tessier	TT	$\frac{dS_N}{dt} = \mu^{**}\,(1 - e^{-\frac{S_N}{k_N}})\,(1 - e^{-\frac{S_C}{k_C}})$

Table S3
Kinetic constants for Double Model denitritation data fitting.

Run	***MM***				***MB***				***BB***			
	μ^{***}	k_N	k_C	Φ	μ^{***}	k_N	k_C	Φ	μ^{***}	k_N	k_C	Φ
D1	63.70	770.20	80.38	13.26	64.28	1036.64	65.91	13.31	***128.92***	***914.12***	***66.89***	***12.61***
D2	89.88	907.51	82.38	27.95	77.86	1036.95	65.90	27.91	***128.92***	***914.74***	***66.89***	***13.34***
D3	80.00	887.09	85.64	26.99	67.39	1052.32	63.11	26.61	***150.51***	***824.77***	***70.65***	***25.46***
D4	98.12	944.38	96.75	24.18	61.19	769.62	72.74	25.06	***149.35***	***854.70***	***64.99***	***24.44***
D5	130.447	1171.88	135.07	23.50	61.18	1039.21	71.73	21.32	***119.65***	***948.717***	***62.47***	***16.41***
D6	115.59	1441.65	135.39	12.99	58.73	1102.55	77.14	10.29	***102.07***	***963.46***	***64.42***	***10.73***
Run	***BM***				***MT***				***TM***			
	μ^{***}	k_N	k_C	Φ	μ^{***}	k_N	k_C	Φ	μ^{***}	k_N	k_C	Φ
D1	105.53	1006.04	67.83	13.57	52.47	810.97	66.64	14.33	63.48	876.79	76.44	13.98
D2	219.82	1147.39	65.89	27.99	103.35	809.27	66.31	29.29	115.92	835.82	75.68	28.59
D3	230.56	769.62	91.02	26.13	135.58	769.62	79.73	28.02	165.06	901.93	90.17	26.98
D4	333.05	770.00	103.00	24.84	191.12	762.56	82.62	25.65	201.76	819.64	73.23	25.17
D5	354.05	770.00	102.96	18.36	236.80	764.46	81.27	24.75	232.11	820.67	73.23	22.07
D6	329.34	837.47	124.59	17.33	214.50	729.19	190.91	24.86	206.58	804.69	202.42	20.76
Run	***BT***				***TB***				***TT***			
	μ^{***}	k_N	k_C	Φ	μ^{***}	k_N	k_C	Φ	μ^{***}	k_N	k_C	Φ
D1	71.39	918.48	63.97	13.80	48.91	919.61	64.47	13.11	64.07	940.96	64.09	13.69
D2	70.25	813.68	67.38	27.95	60.40	928.81	64.02	27.41	110.80	943.31	63.76	28.31
D3	76.83	839.50	81.64	26.69	56.71	974.74	64.51	26.20	143.63	905.20	83.52	26.99
D4	109.28	1084.63	95.41	23.78	54.23	902.00	65.53	24.66	198.22	911.02	86.93	25.20
D5	98.69	112.41	95.41	24.01	48.06	942.57	70.39	19.64	227.65	911.02	51.29	21.92
D6	78.28	1134.62	112.24	15.93	44.16	1121.49	70.22	10.18	874.86	226.23	18.99	202.71