1	Supporting information
2	
3	<u>A Multi-Phase Electrode</u> Microbial Fuel Cell System <u>that</u>
4	Simultaneously Converts Organics Coexisting in Water and Sediment
5	Phases into Electricity
6	Junyeong An, Hynsoo Moon and In Seop Chang*
7	
8	Summary
9	Page S2: Figure S1
10	Page S3: Figure S2
11	Page S4: Figure S3
12	Page S5: Figure S4
13	Page S6: Table S1
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

- 1 FIGURE S1. Multi-phase MFC operation system containing control sets of MFCs: four
- multi-phase MFCs and duplicated control MFCs (FT-MFC, SMFC-A, and SMFC-B). 2

(h) (a) (b) FE FE FE FE (c) FE FE (d) ME ME ME ME - (e) ME ME ME ME SE (f) (g) Multi-phase MFC FT-MFC SMFC-A SMFC-B (a) Ag/AgCl reference electrode

- (b) Feeding line
- (c) Floating-electrode (FE)

- (d) Adjustable acrylic partition
- (e) Mid-electrode (ME)
- (f) Sediment-electrode (SE)

(g) Acrylic stick

4

5

6

7

8

9

10

11

12

13

3

(h) Peristaltic pump

- FIGURE S2. (A): The development of <u>current</u> during continuous acetate supply at  $C_{330}$ ;
- 2 (B): changes of  $\underline{DO}$  at  $C_{330}$ .

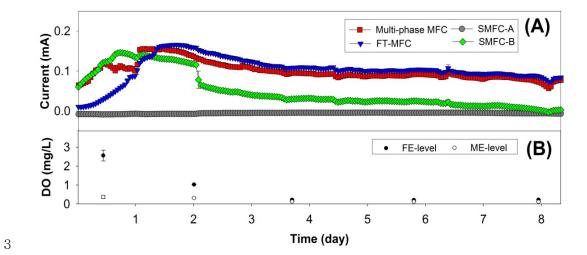
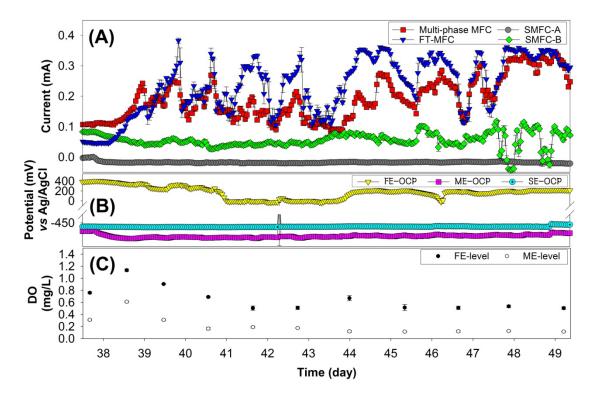


FIGURE S3. (A): The development of <u>current</u> of MFCs under continuous acetate

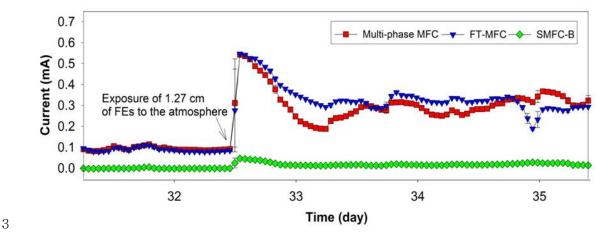
supply at  $C_{188}$ ; (B) equilibrium potentials of FE, ME, and SE during operation at  $C_{188}$ ;

(C): changes of  $\underline{DO}$  at ME and FE during operation at  $C_{188}$ .



1 **FIGURE S4.** The effect of exposing 1.27 cm of FE to the atmosphere during

2 continuous acetate supply at  $C_{330}$ .



**TABLE S1.** The total coulombs (C) of MFCs and coulombic sums (FT-MFC & SMFC-A, FT-MFC & SMFC-B) are illustrated, integrated over days <u>based on</u> the currents obtained during continuous acetate supply at C<sub>330</sub> and C<sub>188</sub>.

Operation Mode	<i>FT-MFC</i> ( <i>C</i> )	SMFC-A (C)	SMFC-B (C)	<u>Multi-phase</u> <u>MFĈ</u> (C)	Sum of SMFC-B & FT-MFC (C)	Sum of SMFC-A & FT-MFC (C)
Continuous (C <sub>330</sub> )	737.0	-39.4	388.0	712.0	1130.0	698.3
Continuous (C <sub>188</sub> )	2420.0	-178.0	567.0	1970.0	2990.0	2240.0