SUPPORTING INFORMATION

Electrochemical study of multi-electrode microbial fuel cells under fed-batch and continuous flow conditions

Lijiao Ren, Yongtae Ahn, Huijie Hou, Fang Zhang, Bruce E. Logan*

Department of Civil and Environmental Engineering, 212 Sackett Building, The Pennsylvania State University, University Park, PA 16802, USA

*Corresponding author. Tel.: +1 814 863 7908; fax: +1 814 863 7304.

E-mail address: blogan@psu.edu (B.E. Logan).
Scheme S1. Equivalent electrical circuits for the electrode connections: (a) individual connection and (b) combined connection. The red boxes indicated the MFC reactors with the positive sign “+” for cathodes and negative sign “-” for anodes.

Figure S1. Experimental data and modeling results of the tracer test, where HRT is hydraulic retention time, \( d \) is the dispersion number, and \( n \) is the number of CSTRs in series.
Figure S2. Power production of the MFC reactors in fed-batch mode. (a) Individual connection showing the identical performance of the four MFC reactors (R5 to R8). (b) Combined connection where the summed power of the four individual reactors (4 × Average) compared to that of the combined reactor (M5678).

Figure S3. Power production of the MFC reactors operated in continuous flow with the flow from R5 to R8. (a) Individual connection showing the different performance of the four MFC reactors (R5 to R8). (b) Combined connection (M5678).
Figure S4. Polarization curves of the MFC reactors operated in continuous flow with the flow from R1 to R4. (a) Individual connection showing the different performance of the four MFC reactors (R1 to R4). (b) Combined connection showing the potential of the individual electrodes (M1234). Letter “A” indicated the anodes and “C” the cathodes.

Figure S5. Power production of of the MFC reactors hydraulically connected using needles in continuous flow with the flow from R5 to R8. (a) Individual connection showing the different performance of the four MFC reactors (R5 to R8). (b) Combined connection (M5678).
Figure S6. Power output of the MFC reactors at individual connection (R1 to R8) and combined connection (M1234 and M5678) under different external resistances in fed-batch operation.
Figure S7. Power output of the MFC reactors at individual connection (R1 to R8) and combined connection (M1234 and M5678) under different external resistances in continuous flow.
Figure S8. Current output of the anodes and cathodes at combined connection (M5678, 125 Ω external resistance) in continuous flow.