Supporting information

Methane production in microbial reverse-electrodialysis methanogenesis cells (MRMC) using thermolytic solutions

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Figure S1. Photograph of the two-chamber bioelectrochemical cells used to start up the methanogenic biocathodes: (a) stainless steel (SS) mesh coated with Pt, SS/Pt; (b) carbon cloth (CC) coated with carbon black (CB), CC/CB; (c) plain graphite fiber brush, GFB.

Figure S2. Methane gas production (per catholyte volume) of the two-chamber bioelectrochemical cell using different biocathodes. The methane production rate was 0.76 ± 0.01 mmol L⁻¹ d⁻¹ for SS/Pt biocathode, 0.59 ± 0.02 mmol L⁻¹ d⁻¹ for CC/CB biocathode and 0.33 ± 0.02 mmol L⁻¹ d⁻¹ for GFB biocathode. [SS/Pt: stainless steel (SS) mesh coated with Pt; CC/CB: carbon cloth (CC) coated with carbon black (CB); GFB: plain graphite fiber brush.]
Figure S3. Equivalent circuit for impedance data fitting.

Figure S4. (a) Current generation and (b) methane gas production (per catholyte volume) of the MRMC using different biocathodes. [SS/Pt: stainless steel (SS) mesh coated with Pt; CC/CB: carbon cloth (CC) coated with carbon black (CB); GFB: plain graphite fiber brush.]
Figure S5. Linear sweep voltammetry of the abiotic carbon cloth (CC) cathode in the presence and absence of a carbon black (CB) layer.

Figure S6. Bode plots of impedance data for biocathodes and abiotic controls [SS/Pt: stainless steel (SS) mesh coated with Pt; CC/CB: carbon cloth (CC) coated with carbon black (CB); GFB: plain graphite fiber brush] at different potentials (vs. Ag/AgCl) of (a) –0.8 V [log (|Z|) vs. log (frequency)], (b) –0.8 V [phase (Z) vs. log (frequency)], (c) –1.0 V [log (|Z|) vs. log (frequency)] and (d) –1.0 V [phase (Z) vs. log (frequency)].