Improving Charge Collection in *Escherichia coli*–Carbon Electrode Devices with Conjugated Oligoelectrolytes

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Supporting Information

**Toxicology Data**

Determination of the minimum inhibitory concentration (MIC) and minimum biocidal concentration (MBC) of DSSN+ was carried out on *Escherichia coli* K-12 using a modified protocol.[1] Both results indicated that DSSN+ showed toxicities against *E. coli* K-12 with MIC at 64 µM and MBC at 128 µM. It should be noted that the concentrations used in the microbial fuel cell study were much less than the determined MIC and MBC.

Cells were cultured overnight in lysogeny broth (LB). Cells used for the MIC assays were diluted in phosphate buffered saline (PBS) to a cell density of ~ 1.0 x 10^6 cells/mL. 50 µL of LB broth was first added. 50 µL of 512 µM DSSN+ was added to column 1 and serially diluted in a 96 well plate (Nunclon, flat bottom clear). 50 µL of the diluted bacterial suspension was then added to columns 1–11. The final concentration of DSSN+ ranges from 1 µM to 128 µM while the final density of bacterial suspension in each well was ~ 5 x 10^5 cells/mL. A growth control well with no DSSN+ was also included to assess suitability of the broth for growth. In addition, a sterile control well that was not inoculated was also included to ensure medium sterility. Growth within each well was monitored spectrophotometrically by measuring absorbance at 600 nm using a microplate reader (Tecan M200 Pro, Austria) for 24 hours at 40 minute intervals. The MIC endpoint used was the IC50, the lowest DSSN+ concentration that reduced growth of a bacterial species to less than 50% of the appropriate control (100%).[2,3] Experiments were done in triplicate and mean values are reported.
MBCs were also determined by streaking samples from each well onto LB agar and observing growth after 24 hours of incubation. MBC is defined as the minimum concentration at which there is no growth on the plates after 24 hours.[4]

**Supporting Figures**

*Figure S1.* Pictures of U-tube MFCs in operation (top) and annotated to illustrate device function and components (bottom).
**Figure S2.** Overlaid confocal fluorescence and bright-field images showing intercalation of DSSN+ in *E. coli* colonies on fibres of carbon felt.

**References**