Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

Supporting information:

Evidence that trapping of redox-mediators at the surface of *Chlorella vulgaris* leads to error in measurements of cell reducing power.

Rebecca Thorne, Huaining Hu, Kenneth Schneider and Petra J. Cameron*.

*corresponding author; e-mail p.j.cameron@bath.ac.uk

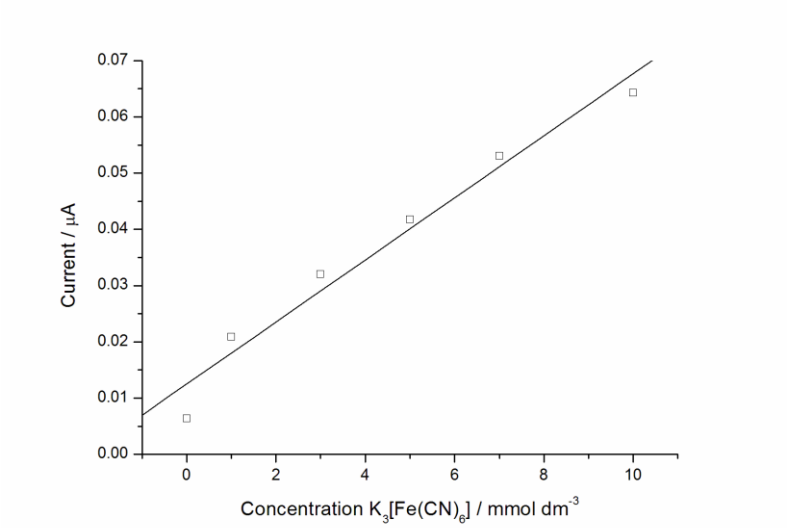

Figure S1. Background currents measured at 100mV positive of the oxidation potential for rotating disk electrode experiments in the presence of media and ferricyanide (no algal cells present). Currents were small and independent of rotation speed.

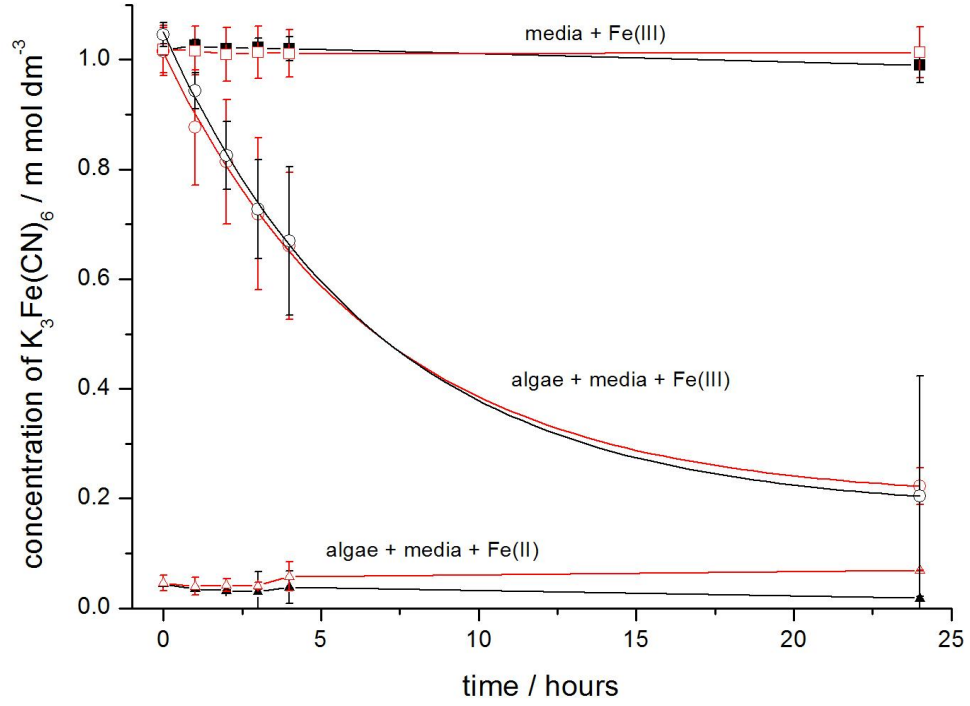

Figure S2. UV-Vis measurements showing the decrease in the solution concentration of ferricyanide in the presence of algae. The error bars show one standard deviation (n=2).

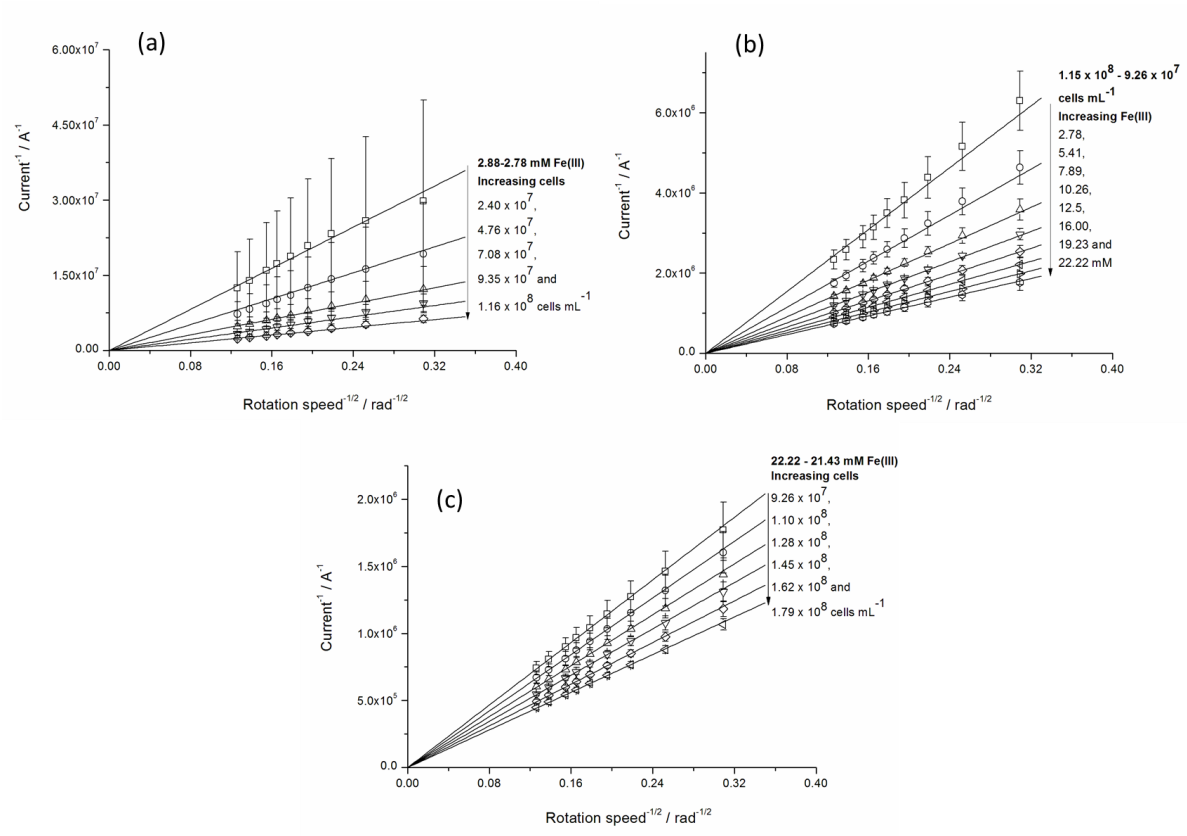

Figure S3 (a) Plots of current^{-1}/A^{-1} versus rotation speed$^{-1/2}$ / rad$^{-1/2}$ with 2.88 mmol dm^{-3} ferricyanide and increasing cells in solution from 2.40x10^7 to 1.16x10^8 cells mL^{-1}, (b) Plots of 1/ current vs. 1/ square root rotation speed with 1.15x10^8 cells mL^{-1} algae in solution and increasing ferricyanide from 2.78 to 22.22 mmol dm^{-3}, (c) Plots of current^{-1}/A^{-1} versus rotation speed$^{-1/2}$ / rad$^{-1/2}$ with 22.22 mmol dm^{-3} ferricyanide and increasing cells in solution from 9.26x10^7 to 1.79x10^8 cells mL^{-1}. All plots are measured with working electrode at a potential 100 mV past the oxidation potential of ferrocyanide. The error bars show one standard deviation (n=3). Media controls (with 0 cells present) have been subtracted.

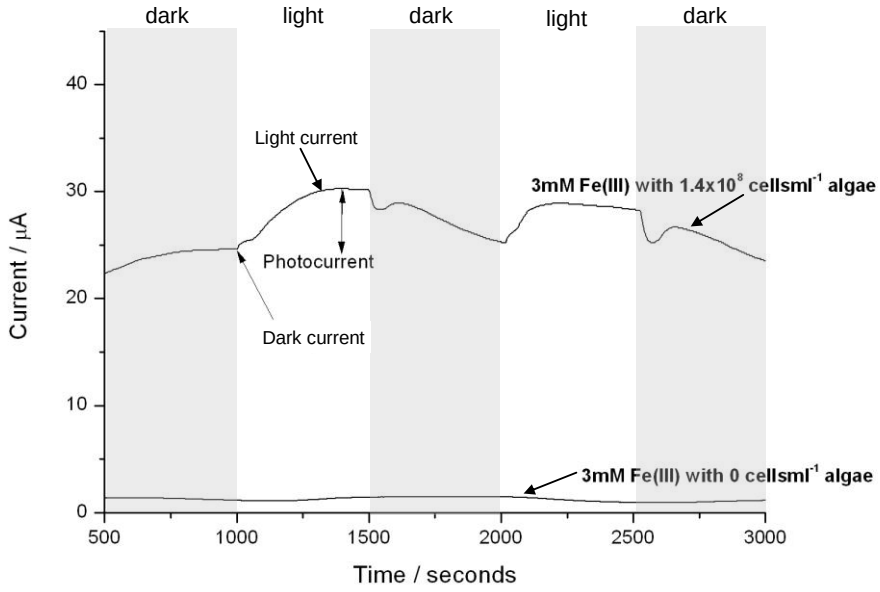

Figure S4. Typical chronoamperometry for experiments with mediator and with or without *C. vulgaris*. As above the current was measured at 100mV positive of the oxidation potential for ferrocyanide.