

Enriching Sulfate-Reducing Bacteria via an Electrochemical-Sulfide-Oxidizing Process on Carbon Electrodes

SHIUE-LIN LI¹ AND KENNETH H. NEALSON^{1*}

¹Departments of Earth Sciences and Biological Sciences, University of Southern California, Los Angeles, CA 90089, US (*correspondence: knealson@usc.edu)

Electromicrobiological Approaches for Enriching Sulfate Reducing Bacteria (SRB)

Cultivating SRB is one of the truly difficult tasks in microbiology [1,2]. We tried to oxidize H₂S generated via sulfate reduction at the anode, and thus remove the inhibitor. The use of differential pulse voltammetry (DPV) revealed that the sulfide started to be oxidized from -200 mV vs. Ag/AgCl, and non-ionized sulfide is relatively difficult to be oxidized by the electrode. Our goal is to simply constantly remove the sulfide electrochemically to facilitate the growth of the SRB from the coastal sediments. It could be evidenced by analyzing current/sulfate profiles (Fig. 2) and microbial communities changes.

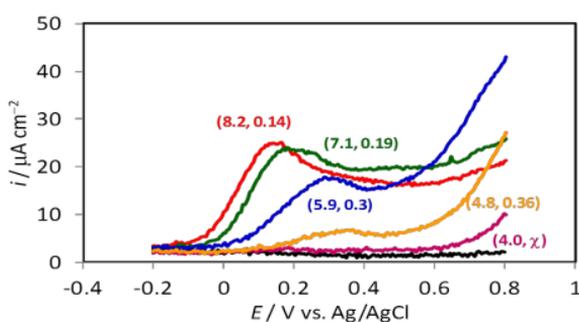


Figure 1: DP voltammogram of sulfide oxidation at different pHs.

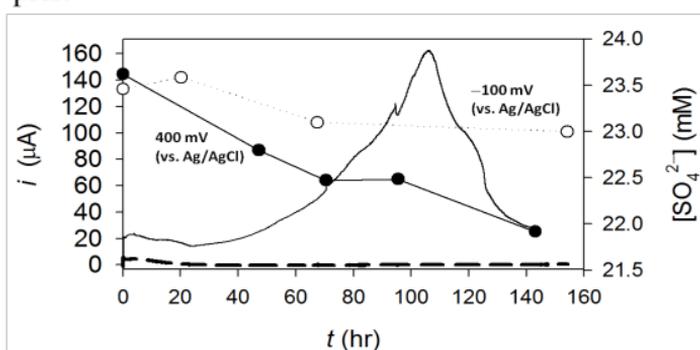


Figure 2: Changes of current and sulfate concentration at different poised potentials

[1] Madigan *et al.*, (2003) Pearson Education, Inc. [2] Widdel (1983) *Arch Microbiol* **134**, 282-285.