

Molecular AND Logic Gate Based on Bacterial Anaerobic Respiration

Mary Anitha Arugula,^a Namita Shroff,^b Evgeny Katz^{*c} and Zhen He^{*a}

^a Department of Civil Engineering and Mechanics, University of Wisconsin-Milwaukee, Milwaukee, WI 53211, USA. Fax: 1 414 2296958; Tel: 1 414 2295846; E-mail:

zhenhe@uwm.edu

^b Department of Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI 53211, USA. Fax: 1 414 2293926; Tel: 1 414 2292964;

^c Department of Chemistry and Biomolecular Science, Clarkson University, Potsdam, NY 13699, USA. Fax: 1 315 2686610; Tel: 1 315 2684421; Email: ekatz@clarkson.edu

Electronic supplementary information

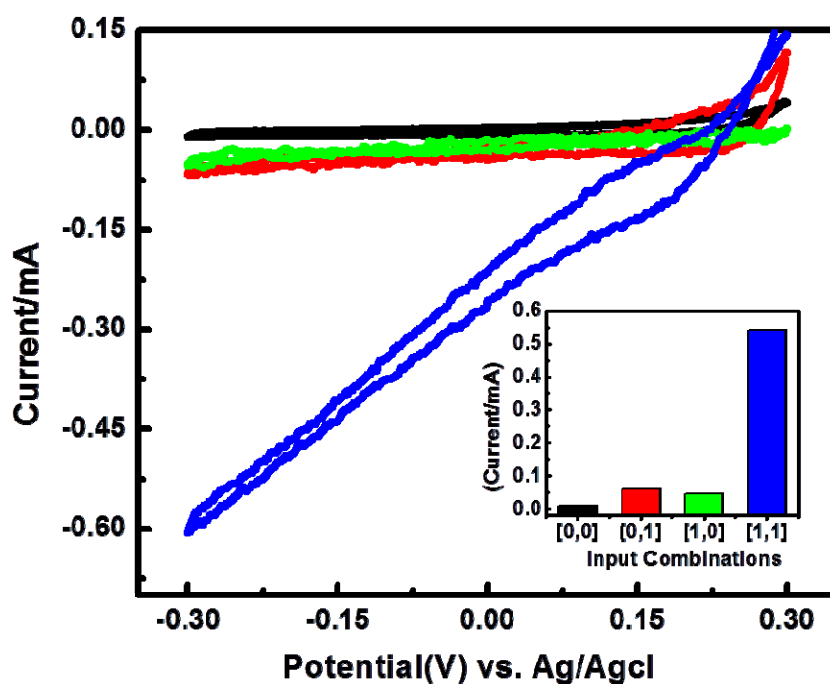


Figure ESI-1. The cyclic voltammograms obtained on the cathode upon application of four different combinations of the input signals under conditions similar to those in Figure 2 in the paper. Inset: the bar chart representing the output current signal at -0.24 V extracted from the cyclic voltammograms and corresponding with logic 0, undefined and logic 1 values. The initial DMSO concentration was 8.3 mM.

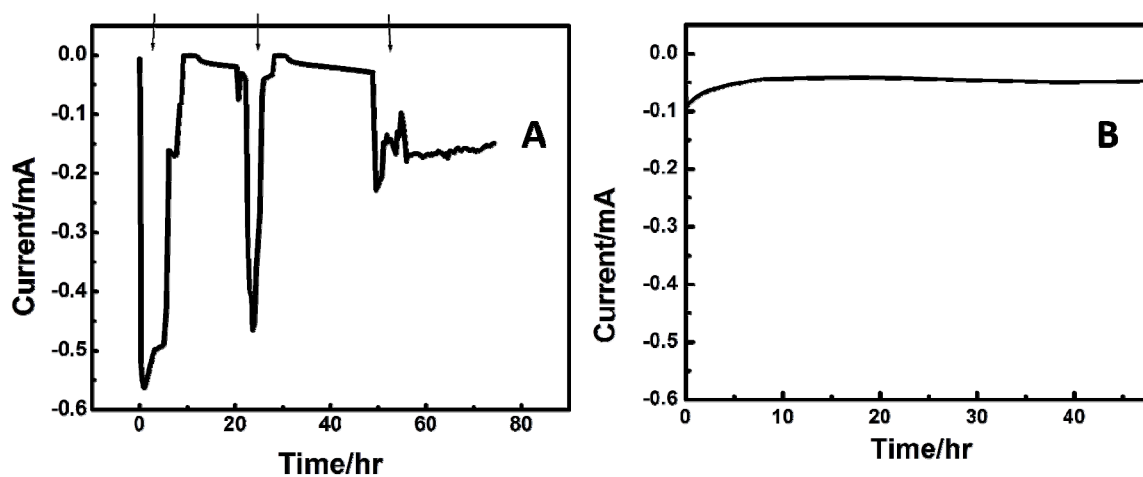


Figure ESI-2. (A) Current responses of the bioelectrochemical cell measured at different concentrations of DMSO (10.3, 8.3 and 4.3 mM) upon the biocatalytic process in the presence of the microbial cells activated by **1,1** input signal combination. (B) Current response in the absence of DMSO. The experiments conditions are similar to those used in Figure 2A.