Enzyme-Based Multiplexer and Demultiplexer

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Supporting Information

Experiments on Multiplexer: For these experiments 1mL plastic cuvette was used. The experiments were performed at 37 °C in 50 mM phosphate buffer. For all logic combinations solutions were mixed by gently pumping the pipette during 10 sec before recording. The **Output** signal was read at wavelength of 420 nm. The time for the **Output** signal was fixed at 20 min from the beginning of the recording. For this particular time, the difference between **0** and **1** output signals, achieved by the tuning the speed of the enzymatic reactions, reaches the highest values.

Experiments on Demultiplexer: The experiments were carried out in 2 mL quartz cuvette. For all logic combinations solutions were mixed by gently pumping the pipette during 10 sec before recording. The **Output** signals were read at wavelength of 420 nm and 340 nm. The values for the **Output** signals were picked up at 10 min from the beginning of the recording. This time gives the best performance for the enzymatic demultiplexer.

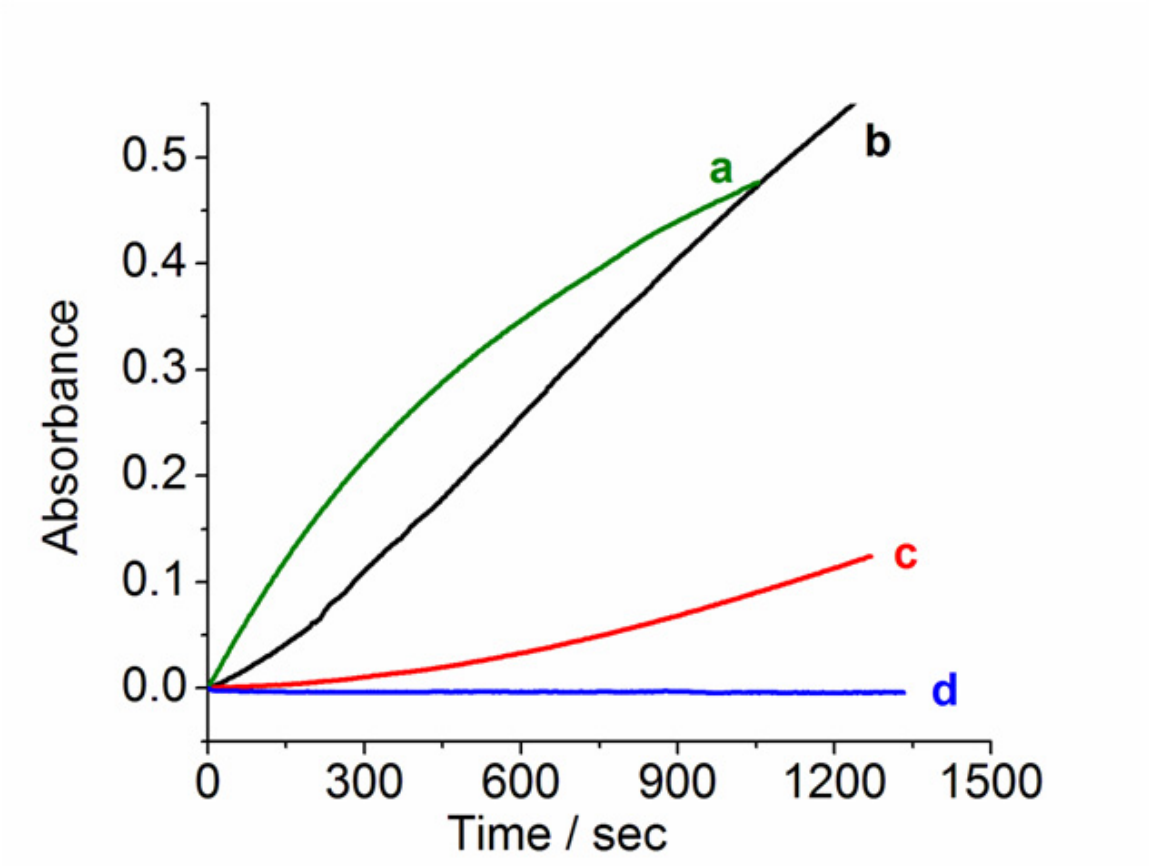

Figure SI1. Time-dependent absorbance changes at λ = 420 nm upon biocatalytic oxidation of 10 mM ferrocyanide in the presence of: a) 0.5 milliunits·mL^{-1} Lac and O_2 (under equilibrium with air) at pH 2.0; b) 0.1 units·mL^{-1} GOx, 10 units·mL^{-1} HRP, 10 mM glucose at pH 8.6; c) 0.1 units·mL^{-1} GOx, 10 units·mL^{-1} HRP, 10 mM glucose at pH 2.0; d)) 0.5 milliunits·mL^{-1} Lac and O_2 (under equilibrium with air) at pH 8.6. The reactions were performed in 50 mM phosphate buffer solution titrated to the desired pH value.