Microbial biofuel cells are one of the most popular topics in bio-electronics for the ecological generation of the electricity. Due to availability and low price of simple microorganisms like baker's yeast (Saccharomyces cerevisiae), the construction of biofuel cells is also cost-effective. According to the literature, most popular redox mediators in construction of biofuel cells based on modified yeast cells are organic or mix type [1,2,3]. However, redox mediators used in construction of biofuel cells often exhibit drawbacks of short lifetime, high cost and toxicity to the microorganisms [4]. Therefore, development of biofuel cells operating without addition of expensive and short-lasting soluble redox mediators remains important.

In this work the yeast cells (Saccharomyces cerevisiae) were modified by using the iron salts (FeCl₃ and K₃[Fe(CN)₆]) to deposit Prussian Blue (PB) on the cell wall and in the periplasmic area of the yeast cell. Cyclic voltammetry experiments (fig 2.) together with optical microscopy (fig. 1) proved that yeast cells, modified with FeCl₃ and K₃[Fe(CN)₆] salts, contain PB (K₃[Fe(CN)₆]). PB act as a mediator in electron transfer reactions, allowing faster electron transfer through the cell wall. As a result, electrode, modified with PB-modified yeast cells (glass|FTO|PLL|Y-PB) shows approximately 10 times higher current peak values in comparison with electrode, modified with PB-unmodified yeast cells (glass|FTO|PLL|Y). Moreover, according to the experiments, 3 times higher cell voltage, in comparison with the glass|FTO|PLL|Y electrode-based biofuel cell, is reached when the glass|FTO|PLL|Y-PB electrode is used.

**Literature**