ISSN:2335-8653
ONLINE ISSN: 2335-8718

## Oral presentation

# Biofuel Cell Based on *Saccharomyces cerevisiae* Using Lipophilic and Hydrophilic Mediator Systems

**Katazyna Blazevic[1], Antanas Zinovicius[2], Juste Rozene[2], Inga Morkvenaite-Vilkonciene[2], Arunas Ramanavicius[1]**

*[1] Vilnius University, Faculty of Chemistry, Department of Physical Chemistry, Naugarduko g. 24, Vilnius, Lithuania*
*[2]Vilnius Gediminas Technical University, Faculty of Mechanics, J. Basanavičiaus g. 28, 03224 Vilnius, Lithuania*

*Corresponding author: katazyna.blazevic@chgf.stud.vu.lt*

**Abstract**
*Saccharomyces cerevisiae*, known as a baker's yeast, widely used in the food and beverage industries. Although, yeast cells are useful like a cell model system as it is a simple single-cell microorganism. Yeast metabolic mechanism is well known, inexpensive, could be cultivated in wastewater or in the media containing some unwanted industrial bio-products. Due to efficiency of redox reactions running during various metabolic processes [1] yeast can be used in the design of bio-electrochemical devices and systems [1-6]. However, the permeability of cell membrane and cell wall of yeast is very limited [2-5]. To improve electron transfer from cell to an electrode, double mediator system was used [7]. To determine electron transfer efficiency towards the electrode, cyclic voltammetry (CV) was applied. This electrochemical method illustrated that redox processes happening in yeast cells can be applied in the generation of electric current and energy of some chemicals suitable for metabolism of yeast can be converted into electrical one. During this research, concentration of yeast in the electrochemical cell was determined. Using this concentration of yeast, the influence of both lipophilic and hydrophilic mediators on the performance of the biofuel cell was assessed.

**Keywords:** *Saccharomyces cerevisiae*, biofuel cells, electrochemistry, redox mediator system, cyclic voltammetry.

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