Microbial and Enzyme Ethanol Biofuel Cells: From Fundamental Bioelectrocatalysis to Application

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Abstract: In this presentation the development of (microbial and/or enzyme) ethanol biofuel cells will be considered. Cooperation among the biocatalysts, ethanol oxidation, fermentation process and new electrodes for the developments of the biofuel cells will be discussed. Furthermore, we describe an original setup that combines the precise control of volatile metabolic formation on enzyme electrode and differential electrochemical mass spectrometry (DEMS) measurements. For instance, we were able to providing precise monitoring acetaldehyde formation from bioelectrocatalytic oxidation of ethanol by alcohol dehydrogenase enzyme.

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