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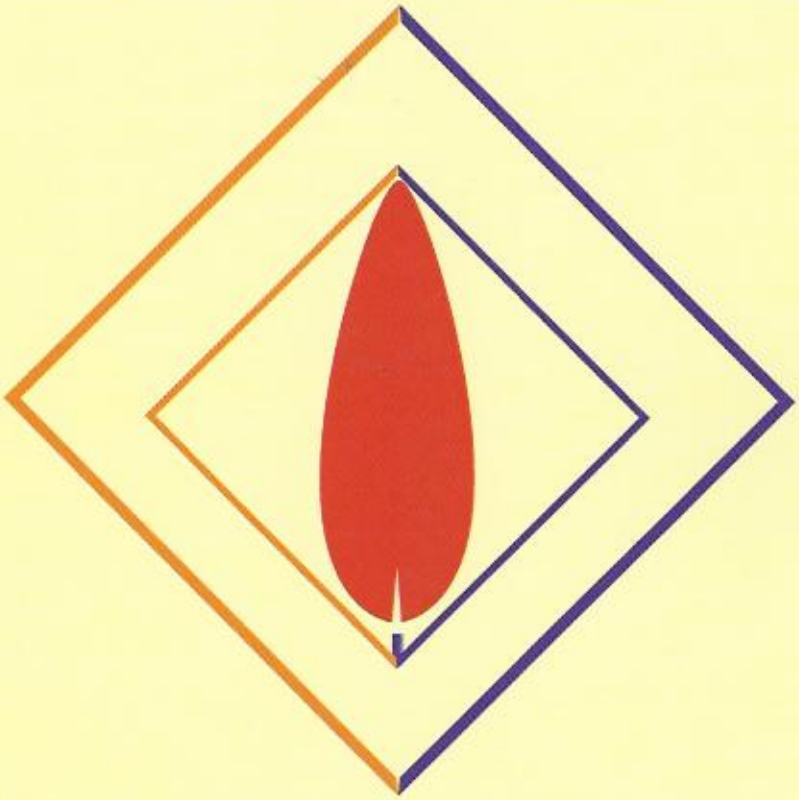

BOOK OF ABSTRACTS

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PRODUCTION OF BIOETHANOL FROM LIGNOCELLULOSE BASED ON GIANT *MISCANTHUS* sp. AND *SORGHUM* sp.

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ABSTRACT

In the last decade we have been observing significant biological and technological progress in the conversion of plant polysaccharides to bioethanol. This is the effect of studies on the intensification of production of lignocellulose materials, new generation cellulolytic and hemicellulolytic enzymes appearing on the market, the development of pre-treatment technologies for cellulose raw materials, genetic improvement of microorganisms for industrial applications and a new approach to hydrolysis and ethanol fermentation technologies. The greatest expectations are connected with the development of a consolidated bioprocess, using genetically engineered microorganisms capable of fermenting both hexoses and pentoses as well as biosynthesising a complex of enzymes required for the hydrolysis of biomass.

One of the examples for the use of lignocelulose is the conversion of biomass produced by giant miscanthus (*Miscanthus* sp.) and sorghum (*Sorghum* sp.) to bioethanol. Within these studies the following experimental tasks have been performed: adaptation of substrates to the process of hydrolysis, selection and testing of commercial enzymatic preparations, selection of strains for industrial applications along with their adaptation of environmental stress generated by the presence of a toxic hydrolysate, optimisation of methanol fermentation with identification of hydrolysis and fermentation parameters.

The study was conducted within two research projects:

1. Phytoremediation driven energy crops production on heavy metal degraded areas as local energy carrier. Acronym: Phyto2Energy. FP7-People-2013-IAPP, the Maria Skłodowska-Curie Action, Cooperation of Science and Industry, 7th Framework Programme of the European Union.

2. No. PBS 181111, entitled Development of an innovative production technology of 2nd generation bioethanol from biomass of sorghum (*Sorghum* sp.) and miscanthus (*Miscanthus* sp.). Acronym: SORMISOL.