



GRAIL

#3 e-Newsletter

February 2016



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ABOUT GRAIL

The **GRAIL** project is a **48-month** Collaborative Project with funding by the European Commission under **FP7 Programme** for Knowledge Based Bio-Economy. The theme of the Grail project is "Preventing and valorising bio-waste in biorefineries Optimal and cost-effective industrial biocatalysts".



GRAIL @GrailProjectFP7
Objectives, work performed and expected results after the 1st period of the project: grail-project.eu/?p=1226
[#glycerol](#) [#biorefinery](#) [#biofuel](#)

Project Progress

BIOTRANSFORMATION OF GLYCEROL TO BIOFUELS

The biological processes for the biofuel productions are proceeding with the optimization of the different procedures. Hydrogen, ethanol and butanol were produced through different ways of fermentation (batch, fed-batch and continuous), using different type of crude glycerol as substrates. A meeting among WP2 partners will be held on the 3th to the 5th of February at Norwegian University of Science and Technology with the aim of transfer the gas stripping technology from SINTEF to ENEA and STUBA. As a result, the gas-stripping, as a promising system for controlling the inhibitory effects of hydrogen, ethanol and butanol, will be adapted to the different strategies for the crude glycerol valorization.

DEMOSTRATION

A dedicated task-force (with complementary competences in biology, chemistry and engineering) has been created in order to identify the major bottlenecks associated with large scale production of low added value compounds from glycerol (biofuels or intermediates for the chemical industries). The simultaneously low concentration of the product and high dilution required for glycerol in water to enable biochemical conversion limit the overall efficiency of the system. The primary objective is to find alternative solutions to develop cost and energy efficient processes that minimize energy consumption and reduce water consumption.

ENVIRONMENTAL CREDENTIALS AND ECONOMIC ANALYSIS

The preliminary LCA and LCC results for converting



Roberto Horcajada -
Inkemia IUCT Group,
participated at the
BIOLATAM 2015
event in **Chile**
on **November 17,**
2015.



Partner Centiv has
been disseminated
GRAIL at TeRiFiQ EU
Project Final
Conference on **27th**
October 2015 at **Milan**
EXPO, Italy.

glycerol into 1,3-propanediol (green chemical) and n-butanol (biofuel) based on the available mass and energy balances has been achieved. The results of the bio-based products are compared to their current reference products to show their dis-/advantageousness regarding their environmental impacts and costs. The future location of the glycerol conversion plant has also been investigated. According to the glycerol geographical availability and the transport infrastructures, Rotterdam region was firstly chosen and will be confirmed after evaluation of other criteria (environmental cost of the electricity consumption, labor costs, etc.).

GRAIL OPEN DAY EVENT

The partners of the GRAIL consortium are actually involved in organizing the “**GRAIL Open Day**” event, a public event which will be held in **Brussels** in **March 9, 2016**. The presentation is expected to offer an excellent occasion to become acquainted with and to discuss about the opportunities emerging from this European project funded by the European Commission, and will include different lectures which will present relevant details of the aims, strategies and technical issues related to the research and development being undertaken.

GRAIL has also published one paper:

Combining Bio- and Chemo-Catalysis for the Conversion of Bio-Renewable Alcohols: Homogeneous Iridium Catalysed Hydrogen Transfer Initiated Dehydration of 1,3-Propanediol to Aldehydes

Authors: Yue-Ming Wang, Fabio Lorenzini, Martin Rebros, Graham C. Saunders, and Andrew C. Marr.



SINTEF

food innovations gmbh
biozoon.



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You are in this list because of the interest in GRAIL Project.



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