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Project term: 2009 – 2012

Financed by: Hamburg University of Technology



Description:

3-Hydroxypropionaldehyde (3-HPA) and Acrolein are powerful platform intermediates with a wide range of applications in both large commodity markets and emerging markets (Fig. 1). For reasonable production from renewable resources low production and purification costs are essential. However, up to date production processes are not designed with respect to cost reduction. Therefore a process using biofuel byproducts like stillage/ vinasse and/ or mash as substrates and distillation for purification is proposed.

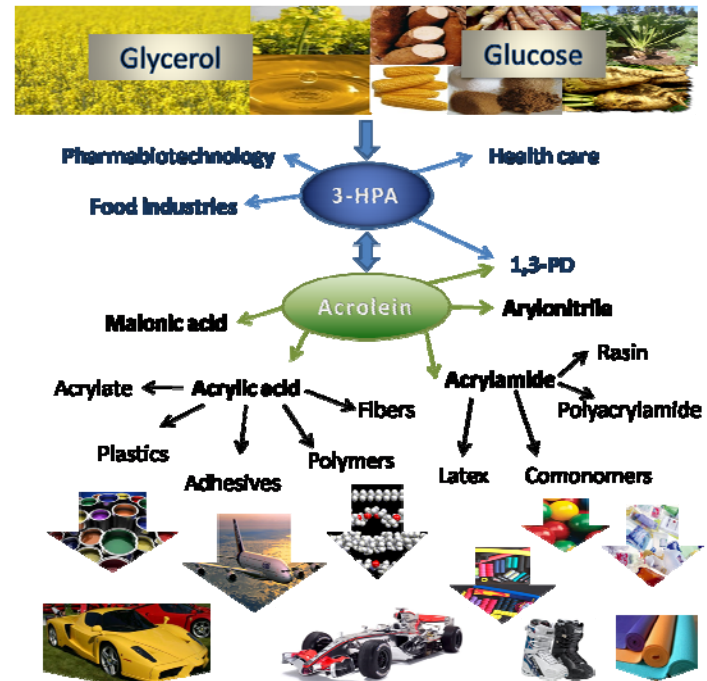


Fig. 1: Utilization of 3-HPA and Acrolein as platform chemicals

Cultivation → Whole cell catalysis → Dehydration → Distillation

A proof of concept approach will be used to check the operability of the proposed process. The single process units will be established, analyzed and optimized by identifying optimal process conditions. Additionally, the process will be simplified with respect to complexity, energy consumption, auxiliary supplies and equipment/ process control. Process intensification will be checked for operability. The results will be used to estimate the capability of the process and its production costs.



Fig. 2: Bioethanol production plant, Zeitz, Germany

References (selected)

C. Ulmer and A.-P. Zeng (2007). **Microbial production of 3-hydroxypropionaldehyde from glycerol bioconversion**. Chem. Biochem. Eng. Q. 21; 321-326.

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