Designing new processes for a bio-based economy

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Published in:
Proceedings. Workshop on Insights and Strategies towards a Bio-based Economy

Publication date:
2016

Document Version
Publisher's PDF, also known as Version of record

Link back to DTU Orbit

Citation (APA):
Designing new processes for a bio-based economy

Special lecture

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Keywords: Biomass; Bioprocess development; Bio-based economy; Fractionation; Cell Factories

Lignocellulosic biomass is a sustainable and low-cost resource that can be used for large-scale production of fuels and chemicals, with additional environmental, economic and social benefits. Several biotechnological processes based on biomass conversion have already been established and are being performed at commercial scale, as the production of biofuels, for example. However, from a techno-economic perspective, the efficiency of the conversion technologies is one important question that still has to be addressed. Moreover, expanding the number of target products that can be produced from biomass is also essential to develop a bio-based economy.

In order to achieve an efficient utilization of lignocellulosic materials and to develop economic, robust, and reliable processes for industrial implementation, some important aspects are essential, such as: i) development of an effective process for biomass fractionation into its main constituents, which avoids sugars losses and the formation of toxic compounds that affect the microbial metabolism during fermentation; ii) design of new bioprocess strategies possibly including process integration, cell and nutrients recycling, among others alternatives; and iii) design of suitable robust cell factories able to efficiently convert lignocellulosic sugars into bio-products.

It is clear nowadays the importance of designing new processes for the development of a bio-based economy in order to achieve more efficient and competitive processes using biomass as feedstock. Such aspects will be presented and discussed in this presentation.