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TOPIC(s) : Biomass conversion

Dawn Technology Biorefinery: 'Pure' glucose and lignin from 2nd generation feedstocks

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PURPOSE OF THE ABSTRACT

Many chemical building blocks can be produced from biomass, nowadays mainly from 1st generation based carbohydrates [1]. However, in the longer term brand-owners want to move towards 2nd generation (2G) lignocellulosic biomass. The use of non-edible lignocellulosic biomass is an equally attractive source to produce chemical intermediates and an important part of the solution addressing the global issues (Paris targets).

With Dawn technology, Avantium's strategic objective is to deliver the best in class 2G 'pure' glucose technology for (bio-)chemical & bioenergy applications. This not only allows for a sustainable future but in parallel delivers value generation from the implementation of this technology. Along with 2G pure glucose, Dawn technology produces large amounts of lignin. All these product streams when marketed at their highest value, deliver an economically viable technology for sustainable bio-chemical production [2].

In this presentation particular attention will be given to the Dawn technology for the production of 'pure' 2nd generation glucose and the lignin stream that is produced during this process. Valorization of these concentrated acid type lignins is not trivial and most available research on lignin conversion is performed on lignins originating from alkali or organosolv processes [3]. Structural and chemical characterization of the concentrated acid derived lignin has revealed valuable information that can be used to identify potential outlet streams.

Avantium has achieved a range of technological improvements on the concentrated mineral acid based process to make the process techno-economic competitive. A consortium consisting of AkzoNobel, RWE, Chemport Europe and Staatsbosbeheer has been established to bring this technology to commercial scale. As a first step the pilot plant built in Delfzijl, the Netherlands, has been opened in summer 2018.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Biorefinery | 2nd generation glucose | Lignin | Hemicellulose

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