ISGC 2022

N°1435 / OC
TOPIC(s) : Biomass conversion

Selective amination of sugar for the synthesis of surfactants

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PURPOSE OF THE ABSTRACT

Sugars can be obtained from lignocellulosic biomass. They are renewable and inexpensive platform molecules; they have multiple uses notably as biosurfactants [1,2] , . The latter are characterized by a hydrophilic head, namely, poly-hydroxylated molecule, and a hydrophobic tail such as fatty acids or alkylamines. Although 96% of surfactants come from the petrochemical industry, there is now a growing demand for the production of biobased surfactants [3]. Therefore, their synthesis from sugars is the subject of numerous research. In this study, the amination of methyl-glucose in the presence of alkylamine has been studied in the presence of homogeneous or heterogeneous catalysts (Figure 1). The main objective of this work is the selective monoamination of sugars. The control of the selectivity was carried out thanks to the use of a Ru-based catalyst under H2 atmosphere. The selectivity for secondary and tertiary amines has been optimized addition, in the presence of heterogeneous catalyst, the catalyst is recyclable up to 10 cycles.

FIGURES

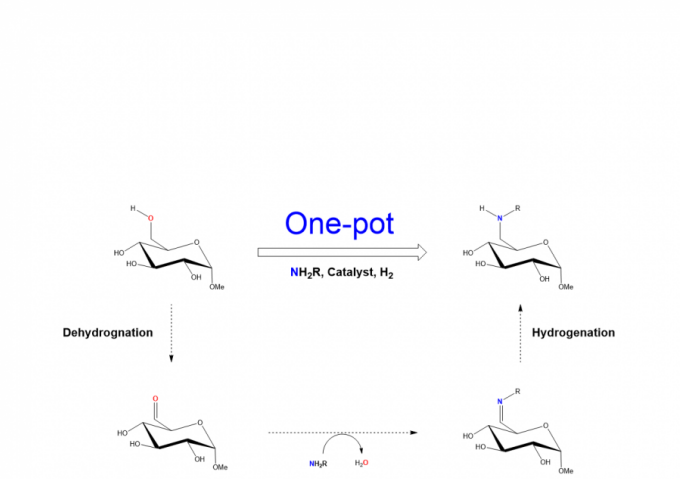

FIGURE 1

Synthesis of amino sugars

Figure1

FIGURE 2

KEYWORDS

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[2] D. G. Hayes, D. K. Y. Solaiman, R. D. Ashby, Biobased Surfactant : Synthesis, properties, applications, Academic Press and AOCS Press, 2019.

[3] Bridging the gap between lab and market for new innovative biosurfactants: the Applisurf approach