

## Second request for industrial partners

(18<sup>th</sup> of February 2020)

Project title: Interactive Membrane Technology for the Selective Separation of Polyalcohol Mixtures

Acronym: MEMSEP

Project ID	
Type	ICON
Period	2 years
Starting date	2020
Total project budget	To be determined
Total man months	To be determined
Subsidy percentage	According to SBO- and O&O regulations
Executing partners	To be determined

### Project description

#### Introduction

Mixtures containing closely related molecules in terms of physical properties are difficult to separate using traditional techniques. Affinity separations are usually employed to mitigate this problem. Polyalcohols are particularly problematic to separate as affinity alone cannot induce an economically-viable separation. For example, the separation of carbohydrate mixtures such as glucose/fructose is difficult given their similar physical and structural characteristics.

So far, successful techniques used in separating polyalcohol mixtures have relied on tedious chromatography processes or various complexation methods coupled with selective extraction. However, in almost all cases, the introduction of various additives into the stream as well as pH manipulation are required. Other disadvantages related to chromatography include the need for huge amounts of solvent and major difficulties in up-scaling. Such separations are also batch processes and normally imply expensive installations, low productivity and yields of the desired product. To achieve more sustainable processes, energy-efficient and highly selective separation techniques must be developed. In that context, membrane technology has major advantages over other separation technologies, such as low processing costs, energy requirements and environmental impact. Nevertheless, current membrane designs rely mostly on affinity or particle-size separation which are not ideal for the efficient and selective separation of polyalcohols.

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## Goal

This project aims at developing a more efficient and selective membrane technology for separating polyalcohol mixtures and valorising the resulting fractions. Novel functional groups will be grafted onto the membrane's active surface, allowing separation based on subtle conformational differences in spatial bonding geometry and strength. This should allow an interactive strategy that will selectively extract the targeted molecule and channel it through the pores. Separation would be mainly driven by selective conformational interactions between the grafted group and the targeted molecule, and will not rely on the integration of additives, the pH manipulation or the use of large amounts of solvents.

## Expertise

The current consortium includes one company providing a test case for the separation of a specific carbohydrate mixture, and one company interested to valorize the resulting fructose fraction.

To complete the consortium, Catalisti is searching for (non-limitative):

- Additional industrial partners interested in separating polyalcohol mixtures;
- Additional industrial partners interested in valorizing the resulting fractions of polyalcohol mixtures;
- Additional industrial partners interested in valorizing > 95% concentrated fructose.

*Partners that wish to participate in Catalisti-supported projects, are required to be preferred member of Catalisti. For more information on membership and membership fees please contact Linsey Garcia-Gonzalez ([lgarciagonzalez@catalisti.be](mailto:lgarciagonzalez@catalisti.be)).*

## [How to reply to this request](#)

Please send an **email** before **February 28<sup>th</sup> 2020** to [lgarciagonzalez@catalisti.be](mailto:lgarciagonzalez@catalisti.be) and **briefly describe your interest and potential contribution** to the project. Based on all offers, the current industrial partners will determine together with Catalisti which partners can join the consortium. After submission of your offer, you can be contacted by telephone to further elaborate your offer. Please contact Linsey Garcia-Gonzalez ([lgarciagonzalez@catalisti.be](mailto:lgarciagonzalez@catalisti.be), +32 479 450 426) if you have questions concerning this Request for Partners.

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