Request for Industrial Partners

Lithium catalyst reduction, recycling and replacement

Acronym: LiR³

Project ID	
Type	ICON
Period	TBD
Starting date	2024
Total project budget	TBD
Subsidy percentage	According to SBO and O&O regulations
Current industrial partners	Confidential
Catalisti contact	Aron Deneyer (adeneyer@catalisti.be) Bert Boekaerts (bboekaerts@catalisti.be)

Project description

Introduction

Specific polymers are produced with the aid of a lithium-based catalyst for anionic polymerization. Nowadays, the lithium remains present in the final product as it is not separated from the polymer matrix. However, due to the rapidly growing production of lithium ion battery-powered electrical vehicles, the lithium consumption has drastically increased over the past decade. This increase in demand has resulted in drastic price increases and severe supply issues. Therefore, this project aims to **limit the impact of the lithium price volatility by reducing the usage of lithium (adjusted recipes or switching to other catalysts) and recycling the lithium catalyst from the polymer matrix before sale.**

Lithium (Li) is seen as one of the **strategic critical raw materials (CRMs)** by the Europe commission (Criticial Raw Materials for the EU, 2023). Hence, saving Li by reducing its consumption and allowing recuperation via recycling are important steps in the sustainability agenda of Europe and thus also Flanders.

Goals

The innovations of this project are threefold:

- First, **new anionic polymerization catalysts**, equally active non-Li-based, **will be explored** and upscaled;
- Second, **polymerization recipes will be amended** in order to consume less Li-based catalyst while obtaining products with identical properties;
- Third, one will *i)* develop a new method to convert the Li-based catalyst into a **water extractable lithium-compound**, *ii)* develop an industrial technology to extract it from the apolar polymer matrix, and iii) develop a method to purify the Li-compound from the specific solution and convert it into an industrially relevant Li-compound for further valorisation.

Request

To complete the consortium, Catalisti is searching for additional industrial partners with a similar (Li-)case/problem. Industrial partners that would like to valorize strategic critical raw materials such as Lithium out of their waste, side or product streams can be considered as consortium partner.

Besides, the consortium is also looking for the following missing expertise:

- **An industrial partner, with expertise on extraction technologies, able to develop an advanced extraction technology for efficient and selective Li removal from dilute aqueous solutions and/or for the direct removal of lithium ions from an apolar polymer solution/matrix;**
- **An industrial partner, with expertise in Lithium recycling, able to valorize the extracted lithium salts;**
- **A partner, with expertise in metal catalysis, able to design alternative catalysts for the synthesis of the respective polymers.**

How to reply to this request

Please send an **email** before 8/01/2024 to Aron Deneyer (adeneyer@catalisti.be) and Bert Boekaerts (bboekaerts@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 to further elaborate your offer.

Important notice: Partners that wish to participate in Catalisti-supported projects are required to be member of Catalisti. For more information on membership and membership fees, please visit our website or contact Aron Deneyer (adeneyer@catalisti.be) *and Bert Boekaerts* (bboekaerts@catalisti.be).

Contact

Please contact Aron Deneyer (adeneyer@catalisti.be) or Bert Boekaerts (bboekaerts@catalisti.be) if you have questions concerning this RfP.
