

## IRP3 (Chemstream)

### Job description

<b>Research topic</b>	<b>Bio-based ingredients for coating formulations</b>
<b>Recruiting organization</b>	CHEMSTREAM BVBA, Edegem, Belgium
<b>Application deadline</b>	At the earliest convenience, but no later than December 31, 2020
<b>Starting time</b>	February 2021 or as mutually agreed
<b>Contract duration</b>	3 year (or if agreed otherwise)
<b>Salary and benefits</b>	The salary and benefits correspond to a regular promotion student, following the rules of the recruiting organization and EU Grant Agreement.
<b>Trial period</b>	Depending on the recruiting organization rules, the appointment can be subject to the satisfactory completion of a certain trial period.
<b>For more information on:</b>	
<b>a) Research topic</b> , contact your future supervisor	Katrien Bernaerts, <a href="mailto:katrien.bernaerts@maastrichtuniversity.nl">katrien.bernaerts@maastrichtuniversity.nl</a>
<b>b) Contract details and application procedure</b>	Geert Deroover. <a href="mailto:geert.deroover@chemstream.be">geert.deroover@chemstream.be</a>

## Scientific content

**This research project contributes to the Biobased Value Circle objectives by focusing on the synthesis and evaluation of biobased ingredients for coating formulations.**

Carbohydrate-derived compounds hold a great potential as monomers for polymer production, particularly when their production does not compete with the plantations designated for food production (2<sup>nd</sup> generation biomass). Diethyl galactarate is an example of such a molecule obtained from sugar beet pulp, a waste product from sugar production. Typically, in comparison with common monomers, sugar-derived monomers contain functionalities in their backbone like hydroxyl groups. The hydroxyl functionalities can be protected with different functional groups by acetal formation prior to polymerization via polycondensation. Functional polyesters and/or polyethers will be made that can be used as resins for coatings. In this work, we will on one hand prepare and characterize cyclic galactaric acid derived monomers with reactive functional groups and polyesters/polyethers thereof. The functional groups allow reversible crosslinking, and translated into coating applications this means self-healing ability thanks to the presence of dynamic bonds (at Maastricht University). On the other hand, we will prepare cyclic galactaric acid derived monomers and polyester/polyether resins thereof that are applied in toners (at Chemstream).

**The general requirements for all Biobased Value Circle positions apply here, i.e.:**

- you may already be in a PhD program but you cannot be a PhD holder,
- you must have **less than 4 years of research experience**, i.e., you should be an early-stage researcher,
- you must not have resided or carried out your main activity in the country of the hiring organization (i.e. Belgium) for more than 12 months during the last 3 years immediately prior to the recruitment (short stays such as holidays and/or compulsory national service are not taken into account), and
- you should have a high-level knowledge of the English language.

**Furthermore, the position-related requirements are:**

- Master's degree in organic and polymer chemistry;
- skills in monomer and polymer synthesis & characterization, knowledge of coating formulations is beneficial;
- has a strong interest to investigate structure-property relationships of the synthesized polymers in coating applications;
- aims at helping to create ready-to-market products from the insights gained during the PhD study – in balance with profound scientific publishing in peer review journals;
- likes to interact with academic and industrial partners;
- is result driven, inventive, creative, counts with potential impact, works 'accountable' and works with ownership; ability to work independently as a member of UM and Chemstream research team and of the Biobased Value Circle community;
- masters scientific English for speaking, reading, and writing. Knowledge of Dutch is not required;
- enrollment as a doctoral student at UM within four months;
- 18 months at Chemstream and 18 months secondment to Maastricht University;

- positive attitude to both analytical and practical research work.

**How to apply:** Applications must be submitted in English to Geert de Roover. [geert.deroover@chemstream.be](mailto:geert.deroover@chemstream.be).

**Mandatory appendices:**

- a Curriculum Vitae,
- a letter of motivation (maximum of one page),
- the contact details of two referees,
- a copy of B.Sc. and M.Sc. certificates with annexes, and
- a language certificate (IELTS, TOEFL, PTE Academic, Cambridge Language Certificate (Proficiency CPE or Advanced CAE) if available.

We will recruit until the position is filled. The selection process commences immediately, but will close when a suitable candidate has been found, even if this prior to the final date of the application window.

In case no suitable candidates are found, ChemStream reserves the right to re-open the call.