



DN-MSCA-Horizon Europe
Grant n°101119277

In the frame of the Doctoral Network MSCA Horizon Europe “ChimSep” dedicated to the integration of membrane separations (Organic solvent nanofiltration and membrane distillation) in fine chemistry, 13 PhD projects are funded for 36 months: 8 dealing with membrane science and 5 dealing with homogeneous catalysis.

See all the 13 projects at <https://theses.doctorat-bretagne.fr/dn-chimsep>

Title - PhD#4- New synthetic design and catalytic engineering toward long-chain polymer precursors from renewables
Joint doctorate

Offer description

PhD#4 will design new recyclable catalysts for alkoxy carbonylation, hydroformylation and hydrogenation reactions. At University of Rennes-ISCR-OMC team (22 months), he/she will synthesize modified catalysts for efficient carbonylation reactions and OSN process. Ligands such as Xantphos or Biphephos will be modified with polyethyleneglycol tags in order to increase the polarity of the catalysts expected to enhance the rejection by OSN membranes. These catalysts will be evaluated in the carbonylation of the biosourced methyl 10-undecenoate. The challenging ethoxycarbonylation will be first investigated with commercially available catalyst to address the particularities of this reaction. Short stays (2-3 weeks) of PhD#4 at VITO will be scheduled to assess a panel of membranes and identify best candidates. He/she will then spend 2 months at Servier working on homogeneous catalytic reactions and process at industrial scale where he/she will also be trained to the specific analytical tools implemented in the pharmaceutical industry. At LIKAT (12 months) PhD#4 will extend the scope of his/her knowledge by pursuing the work initiated by Chemist PhD#7 dealing with the reduction of furfural. The preparation of the PhD thesis and defence will be finalized at University of Rennes-OMC team.

Keywords:

Molecular chemistry; Homogeneous Catalysis; Organometallic chemistry; biomass

PhD starting date: 01/11/2023

Application deadline: 31/08/2023 (23:59:00, Paris)

<https://theses.doctorat-bretagne.fr/dn-chimsep>

Work location: Rennes, France (22 months) & Rostock, Germany (12 months)

The Doctoral Candidate will be enrolled in a joint doctorate between two partners of the network. He/she will spend 22 months with the hosting partner of the present application at University of Rennes, France and then a mobility of 12 months Likat, Germany.

During the doctoral period, the PhD will also spend 2 months at Servier-France

Contacts

Thesis main supervisor (France)

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Thesis second supervisor (Germany)

Eszter Barath

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Required Education Level: Master degree or equivalent

Skills/Qualifications

The candidate will hold a Master degree or equivalent in molecular chemistry with an established experience in organic synthesis; knowledge of homogeneous catalytic processes will be a strong plus but is not mandatory. A previous experience in handling chemicals and running experiments under inert atmosphere and under pressure (autoclaves) will be appreciated as well as skills in organometallic chemistry. Knowledge of analytical characterization techniques, in particular NMR and gas chromatography, is necessary.

Required Language: English, level: Good

Required research experience

An internship of several months in a research laboratory involved in organometallic chemistry and or homogeneous catalysis.

Website for additional job details;

See application platform: <https://theses.doctorat-bretagne.fr/dn-chimsep>
section "Présentation de l'école doctorale » (doctoral network presentation)

Salary

The EU provides support for each recruited researcher in the form of

- Gross salary per month: 2764 € (net should be around 2 200 €). An additional annual premium could be paid.
- + 600 € of mobility allowance. All eligible researchers recruited within a DN are entitled to receive this allowance. It contributes to the private mobility related expenses of the researcher.
- + 495 € of family allowance per month (if eligible to the conditions: be married or equivalent and/or have a child; family, long-term leave and special needs allowances. The family status of a researcher will be determined at the date of their (first) recruitment in the action and will not evolve during the action lifetime.