



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#8 - Transfer hydrogenation of renewable platform chemicals Joint doctorate

#### Offer description

**PhD#8** will achieve the efficient & selective reduction of furfural by transfer hydrogenation using catalysts designed for membrane separation in alcohols. He/she will spend 22 months at LIKAT, to prepare tailor-made Ru complexes bearing bulky or polar ligands. This feature should make them separable from the reaction mixture via separation by a membrane.

**PhD#8** will evaluate these Ru complexes as catalysts for the same reaction in various alcoholic solvents, the key solvents being isopropanol and ethanol. The kinetic parameters of the transfer hydrogenation of furfural to  $\gamma$ -valerolactone will be measured. Cross-feedback will be required with Membranologist **PhD#9** of the doctoral network working on OSN of the same reaction at KU Leuven (Belgium) where a 1,2-week short stay will be organised.

**PhD#8** will also be trained to the specific analytical tools implemented in the pharma industry. At University of Rennes (ISCR-OMC, France, 12 months) he/she will pursue the studies with catalysts prepared at ISCR-OMC potentially extended to hydrogenation of furfural into 1,2 pentanediol & Nickel catalysed aromatic hydrogenation of furfural with feedback of **PhD#7** of the doctoral network. This will involve catalyst synthesis and catalyst testing meeting the principles of separability via organic solvent nanofiltration (OSN). The preparation of the PhD thesis and defence will be finalized at LIKAT.

**PhD#8** will spend 2 months at *Servier-France* working on homogeneous catalytic reactions & process at industrial scale.

#### 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: Rostock, Germany (22 months) & Rennes, France (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 (Likat, Germany) of the present application and then a mobility of 12 months at University of Rennes, France

During the doctoral period, the PhD will also spend 2 months at Servier-France working on homogeneous catalytic reactions and processes at an industrial scale

## Contacts

Thesis main supervisor (Germany)

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Thesis second supervisor (France)

Cédric Fischmeister

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**Required Education Level:** Master degree or equivalent

## Skills/Qualifications

Hands-on experience with air and moisture sensitive materials and high pressure systems, excellent preparation skills.

**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 will be appreciated.

## 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 should be around 2334 € per month (net around 1858 €)
- + 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.