



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-bretagneoire.fr/dn-chimsep>

Title- ChimSep-PhD#5: Feasibility & limitation of Membrane Distillation in olefin metathesis in ethylacetate/dimethylcarbonate
Joint doctorate

Offer description

PhD#5 will evaluate for the first time how Membrane distillation (MD) can be used in separation for fine chemistry. At UMK University of Torun (Poland, 20 months), **PhD#5** will evaluate a single step MD applied to model solutions of increasing complexity, up to an olefin metathesis mixture in EtOAc and dimethyl carbonate (DMC) in order to select the best solvent for MD together with the MD mode (air gap or vacuum). Then separation of products and catalyst will be systematically studied to evaluate flux and rejections (cross-feedback with Chemist **PhD#2& PhD#6** of the doctoral network). The main parameter able to vary will be the temperature difference across the membrane, and in a lesser extend the hydrodynamics.

At University NOVA Lisbon (Portugal, 12 months) he/she will continue the work initiated by Membranologist **PhD#13** of the doctoral network dealing with MD on a transfer hydrogenation mixture inducing cross-feedback between the 2 PhDs.

Finally, the experimental results will provide data to discuss the organic solvent nanofiltration (OSN) and MD transfer mechanisms in the case of the olefin metathesis selected reaction together with the PhDs of the doctoral network involved in OSN applied to the same reaction. Depending on the obtained performances, fractionation processes will be suggested based on single/cascade MD or on a hybrid process coupling OSN and MD for instance and modelled studied. The preparation of the PhD thesis and defence will be finalized at UMK University of Torun.

PhD#5 will spent 4 months at **Convergence/DEMCON** (NL) to achieve filtration experiments in a private environment.

Keywords:

Membrane separation, membrane distillation, homogeneous catalysis

PhD starting date: 01/11/2023

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

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

Work location: Torun, Poland (two years) & Lisbon, Portugal (one year)

The Doctoral Candidate will be enrolled in a joint doctorate between two partners of the network. He/she will spend 20 months with the hosting partner (UMK University of Torun, Poland) of the present application and then a mobility of 12 months at NOVA University, Lisbon, Portugal

During the doctoral period, the PhD will also spend 4 months at **Convergence/DEMCON** (NL) working on membrane separation for industrial applications.

Contacts

Thesis main supervisor (Poland)

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Thesis second supervisor (Portugal)

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Required Education Level : Master degree or equivalent

Skills/Qualifications

The candidate will hold a Master degree or equivalent in chemical engineering or in chemistry with competencies in processes and/or membrane processes.

A previous experience in handling membrane processes will be appreciated as well as knowledge in membrane material science.

Enthusiasm, autonomy, scientific curiosity and ability to communicate are required qualities.

Required Language: English, level: Good

Required research experience

An internship of several months in a research laboratory involved in membrane separation 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 per month : close to 2 003 € (net should be around 1 439 €) , 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.