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-bretagneloire.fr/dn-chimsep

Title - PhD#2 - Ring-closing metathesis (RCM) of bio-sourced precursors.
Joint doctorate

Offer description

At University of Rennes in ISCR-OMC team (France, 22 months), PhD#2 will achieve the synthesis of medium-sized lactones using ricin oil as a platform chemical.
The solvents (dimethyl carbonate, ethyl acetate) have been selected for their low toxicity and for their compatibility with OSN and MD processes.
PhD#2 will prepare the RCM precursors based on methyl ricinoleate, then the RCM of the prepared precursors will be achieved first using commercially available catalysts in order to address the optimized experimental parameters and potential issues that may appear.
The reaction will then be implemented with catalysts prepared by Chemist PhD#6 at University of Warsaw (Poland).
PhD#2 will then move for 2 months at Mane (France) where he/she will be familiarized with syntheses at pilot scale & industrial level and trained to the specific analytical tools implemented in the flavour and fragrance industry.
At University of Warsaw (12 months), PhD#2 will first be trained to organometallic chemistry and to the synthesis of Ru-based olefin metathesis catalysts. The sterically enlarged catalysts prepared will be then implemented in RCM of pacritinib® or related compounds. Cross-feedbacks with Membranologist PhD#11, PhD#5& PhD#13 working on OSN&MD on the same reaction will be used to design a second series of tailor-made complexes with enhanced properties in particular considering double-bond migration side reactions often observed in RCM. The preparation of the PhD thesis and defence will be finalized at University of Rennes.

Keywords:

Chemistry; Homogeneous catalysis; molecular chemistry; organo-metallic chemistry

PhD starting date: 01/11/2023

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

https://theses.doctorat-bretagneloire.fr/dn-chimsep

Work location: Rennes, France (two years) & Warsaw Poland (one year)

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 (University of Rennes, France) of the present application and then a mobility of 12 months at University of Warsaw, Poland

During the doctoral period, the PhD will also spend 2 months at Mane-France working on homogeneous catalysis and process at industrial scale & olfactory evaluation and training on private sector

Contacts

Thesis main supervisor (France)
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Thesis second supervisor (Poland)
Karol Grela
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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 knowledge of homogeneous catalytic processes. A previous experience in handling chemicals and running experiments under inert atmosphere and gloveboxes will be appreciated as well as skills in organometallic chemistry. Knowledge of analytical characterization techniques, in particular NMR and gas chromatography, is necessary. 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 molecular organic synthesis and or homogeneous catalysis.

Website for additional job details;

See application platform: https://theses.doctorat-bretagneloire.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 : 2 764 € (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.