



Postdoctoral position in solid-state chirality control by ball-milling

Location	Salary	Deadline for applications
Belgium	+/- 2700 net	1 st August 2023

Position summary

Post-doctoral scholarship in chemistry/chemical engineering at UCLouvain (Louvain-la-Neuve, Belgium).

Context

This postdoctoral position takes place in the context of a European Project Impactive. The IMPACTIVE project brings together the expertise and knowledge from 17 European research groups/industries from 11 different countries and will develop novel green methods to produce active pharmaceutical ingredients (APIs) using mechanochemistry as a disruptive technology (as acknowledged by IUPAC). Mechanochemistry uses mechanical processes, such as ball milling, twin-screw extrusion, resonant acoustic mixing, and spray drying, to induce chemical reactions. By achieving the objectives of the IMPACTIVE project and showing that mechanochemistry is a green, efficient, and affordable alternative to current API manufacturing methods, we will reduce environmental pollution. The postdoctoral project focuses on those pharmaceutical API that contain a chiral center. Mechanochemical pathways will be developed leading to enantiopure materials. The main focus will be placed on combining synthetic aspects with mechanochemical tools, as well as the principles of crystal engineering. In particular, racemization and deracemization process will be investigated to achieve chiral control.

Main tasks

- *Research activity related to chiral induction using mechanochemical tools focusing specifically on the selected pharmaceutical target compounds of IMPACTIVE.
- *Actively participate to report-writing in the context of IMPACTIVE.
- *Participate to international meetings, conferences of IMPACTIVE or related to the field.





- *Analyze Life Cycle, risk assessment and safety of the developed process.
- *Actively participate to dissemination and communication of the Project.
- *Assist with day-to-day administration related to the Project.
- *Assist with the management of the PhD student working for IMPACTIVE.

Research activities

- Enable deracemization pathways through mechanochemistry (dynamic kinetic resolution, dynamic preferential crystallization, use of chiral coupling agents, ...)
- Use of crystal engineering to induce deracemization at the solid state (Polymorph, salt, cocrystal principles).
- Study racemization of enantiopure intermediates/targets.
- Come to mechanochemical enantiopure pathways for target compounds and upscale these pathways in collaboration with other teams of IMPACTIVE (extrusion, ...)
- Analyze risk and life-cycle management of final process.
- Report writing/article writing.
- Conference participation.
- International stays in other teams of IMPACTIVE if required by project.

Qualifications and candidate profile

- PhD in Chemistry or a related field.
- Knowledge on the concepts of mechanochemistry is a plus.
- Knowledge in the field of solid-state chemistry is a plus.
- Excellent track record.
- Fluent in English (French is a plus).
- Work experience in a field related to pharmaceutical compounds is a plus.
- Motivation to interact with other teams and willing to travel.

Remuneration

- +/- 2700 Net income (depending on the situation of the candidate).
- Scholarship based.
- Mobility rule applies: (The researcher must not have resided or carried out his/her main activity (work, studies, etc.) in Belgium for more than twelve months in the last three years.





E-mail

info@mechanochemistry.eu



Website

www.mechanochemistry.eu

Starting date

Earliest starting date 1st of September 2023 (later starting date is possible).

How to apply

Send your CV and motivation letter to tom.leyssens@uclouvain.be.

www.uclouvain.be/leyssens-group

