



Ph.D. POSITION JOINT PROGRAMME FRANCE-ESTONIA (co-tutelle de thèse) - STARTING DATE 01/03/2022

MECHANOCHEMICAL SYNTHESIS OF AGROCHEMICALS AND VALUE-ADDED MOLECULES FOR THE INDUSTRY

POSITION SUMMARY

Ph.D. Position (“co-tutelle de thèse” – joint-direction) in the field of mechanochemistry applied to organic synthesis and catalysis. *Project acronym:* MECH-AGRO. Full-time, temporary employment. The position is co-funded by Campus France Estonia at University of Montpellier (France) and Tallinn Technological University (TalTech), Estonia. The Ph.D. Programme will deliver double diploma, from both Universities.

CONTEXT

We are looking for a Ph.D. candidate who wants to contribute to the successful delivery of value-added molecules for the industry using novel technologies such as mechanochemistry, identified by IUPAC as one of the top ten emerging technologies that will change the world. A unique opportunity for you to work in a scientific area of great importance, innovative and disruptive, in a setting at the interface with the industrial needs and in close interactions with excellent academic groups members of the European COST Action CA18112 Mechanochemistry for Sustainable Industry (MechSustInd, www.mechsustind.eu).

MAIN TASKS

The Ph.D. candidate will work under the joint supervision of Dr. Evelina Colacino at the University of Montpellier (France) during 18 months, and Dr. Allan Niidu at Tallinn Technological University (Taltech, Estonia) for 18 months, to develop sustainable methodologies for organic synthesis, with a special attention to the preparation of value-added compounds for the agrochemical industry, from laboratory to large-scale.

RESEARCH ACTIVITIES

As Ph.D. candidate, you will deal with the mechanochemical synthesis and development of agrochemicals and their characterization (including at the solid state), in alternative to solution-based procedures and to improve the ecological footprint of each synthesis at laboratory and large scales. The daily synthesis work will be performed at the Université de Montpellier (Charles Gerhardt Institute of Montpellier, ICGM) in France during 18 months and at TalTech Virumaa College in Estonia during 18 months.

The research activity will mainly focus on:



- Design of scalable and green routes for selected agrochemicals
- Preparation of agrochemicals by mechanochemistry and investigation of the mechanochemical process parameters to access them in batch and by 'parallel mechanochemistry' at laboratory scale;
- Translate the batch processes to continuous manufacturing at large scale by reactive extrusion (twin screw extrusion and case studies);
- Solid state characterization of selected final targets;
- Process development to access new solid forms.

QUALIFICATIONS and CANDIDATE PROFILE

To qualify for the position of Ph.D. candidate, you must have a Masters degree in a relevant field such as chemistry and preparative organic chemistry. Experience in mechanochemistry is considered a plus for this position, but not compulsory.

We are looking for you who can work in close collaboration with the group members and as a part of the European Program COST Action CA18112 Mechanochemistry for Sustainable Industry (MechSustInd, www.mechsustind.eu). You can plan and organize your own work, take your own initiatives and responsibility, be analytical and creative and be able to deliver results in time. You need good communication skills and an interest in multidisciplinary research.

The position requires sound verbal and written communication skills in English.

Citizenship: all Nationalities are eligible, except, French or half-French.

During the studies in France, the candidate will benefit from French governmental agency Campus France basic health insurance (details of the contract attached to this document) and the covering of their tuition fees in the French Institution. A monthly housing allowance of 143 EUR is also provided if the candidate is not hosted in a student or CROUS residence. The trips between France and Estonia will also be covered by the grant.

During the studies in Estonia, the candidate will be covered by Estonian national health insurance.

Remuneration:

During the studies in Estonia the net monthly allowance will be 1500 EUR and during studies in France, the net monthly allowance will be 1500 EUR.

STARTING DATE: 1st March 2023

TO APPLY



To apply send by e-mail your application to Evelina COLACINO: evelina.colacino@umontpellier.fr and Allan NIIDU allan.niidu@ttu.ee

The application should be marked with Ref. MECH-AGRO and written in English. The application should be sent electronically and be attached as pdf-files, as below:

CV: *(Please name the document as: CV, Surname, Ref. MECH-AGRO)* including the name and contact details of two references.

Motivation letter: *(Please name the document as: Personal letter, Family name, Ref. MECH-AGRO)* 1-3 pages where you:

- Introduce yourself
- Describe your previous main research results
- Describe your future goals and future research focus

Deadline for application: 16th December 2022