PhD student in organic synthesis and enantioselective catalysis, starting in October 2020

We look for a PhD student (M/F) in organic chemistry and enantioselective catalysis for a 36-month period starting in September or October 2020, with funding provided by the ANR (Agence Nationale de la Recherche = French National Research Agency) project Bond-X-Bond (ANR JCJC 2019).

**Keys words:** organic synthesis, enantioselective catalysis, non-covalent interactions, halogen bonding.

**Project:** The PhD project deals with the preparation and study of new chiral organocatalysts. Enantioselective organocatalysis consists in the use of organic molecules of low molecular weights able to accelerate a chemical transformation while controlling the preferential formation of one enantiomer over the other. Because of their easy access and low toxicity, organocatalysts exhibit a good eco-compatibility, which is interesting in the context of preparing bioactive molecules.

The target catalysts are halohazolium salts that act as halogen bond donors. Halogen bonding is a Lewis acid-base non-covalent interaction that has become more and more frequently used in chemistry, especially in catalysis.

The PhD student work will be devoted to the design of efficient synthetic routes towards chiral haloazoliums salts and the evaluation of their activities and selectivities in different organocatalyzed reactions, but also the in-depth understanding of the reaction mechanisms using different analytical methods.

The PhD student is also expected to take part in the lab’s collective life (Total Synthesis and Organic Reactivity group, within the Institute of Molecular Sciences of Marseille) and in the day-to-day supervision of undergraduate students.

**Applicant profile:**
A Master’s degree in organic chemistry, with honors, is mandatory.
- Ability to carry out organic reactions under an inert atmosphere, to purify the products using standard techniques (chromatography, recrystallization, distillation) and for structural determination (1H, 13C and 2-dimension NMR).
- Experience in enantioselective catalysis would be appreciated.
- Being rigorous, motivated, enthusiastic and with a willingness to work in an international research group.
- Good skills in oral and written communication in French and/or English.
- An experience abroad would be a plus.

**Work environment:**
- The position is open at Aix-Marseille Université on St Jérôme Campus, in the Institute of Molecular Sciences of Marseille (iSM2, UMR CNRS 7313), within the research group Synthèse Totale et Réactivité Organique (Total Synthesis and Organic Reactivity, [https://ism2.univ-amu.fr/en-gb/stereo/stereo](https://ism2.univ-amu.fr/en-gb/stereo/stereo)). The team is composed of 15 researchers and more than 30 non-permanent staff (post-doctoral research associates, PhD students, trainees).
- The PhD student will have an access to all research means of the institute, but also to the analytical technical support from the platform Spectropole ([https://fr-chimie.univ-amu.fr/spectropole](https://fr-chimie.univ-amu.fr/spectropole)). All the communication with the research group (including seminars) is done in English.
- The PhD student will be supervised by Dr. Xavier Bugaut ([https://ism2.univ-amu.fr/en-gb/user/2232](https://ism2.univ-amu.fr/en-gb/user/2232)), Maître de Conférences at Aix-Marseille Université.

**Salary:** 2135 €/month of gross salary (around 1650 €/month of net salary).

**Applications have to be made using the CNRS application portal ([bit.ly/3bWUAjD](https://bit.ly/3bWUAjD)) and should include:**
- a CV including the contact of at least two referees;
- a motivation letter;
- the transcripts of marks for the two years of the Master’s degree.