Funded Postdoctoral position – One year – Marseille, France

Stereoselective iterative radical addition induced by external chiral agent

Institute : Institut de Chimie Radicalaire
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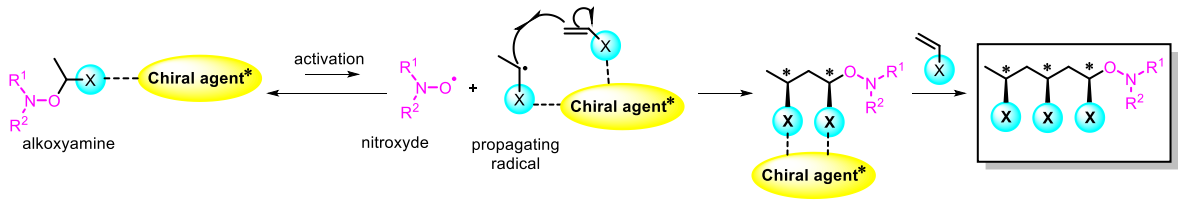
Offer. Postdoctoral position of **1 year** (starting date : between October and December 2024) within the frame Maison de la Chimie funded project : "Stereoselective iterative radical addition induced by external chiral agent".

Project. The impact of chirality on the molecules properties has occupied a significant role in biology and pharmaceutical industry. Among the existing challenges, the development of **stereoselective carbon-carbon bond formation** with high levels of enantio- and diastereoselectivity is of high interest. **Controllable iterative processes** are therefore crucial in the context of green or sustainable chemistry as they provide a very good method for reducing waste, cost and time. In this context, we aim to develop **stereoselective iterative radical addition** in order to synthesize acyclic molecules containing **1,3-nonadjacent stereocenters**. Our approach will lead to control both relative and absolute stereocenter configuration, and will be cost and time efficiency, atom economy and environmental friendliness. This radical approach remains a great challenge in stereoregular preparation of chiral acyclic systems due to the rapid inversion barrier of the radical with a low stereocontrol degree. To tackle this challenge, our project aims at **exploiting the impressive advance in enantioselective radical reaction to reach stereoselective radical iterative addition**. We rely on the **enantioselective organocatalysis** which is a rising tool in radical chemistry that uses enantiopure Lewis or Brønsted acid (chiral agent). The **alkoxyamines** ($R^1R^2NOR^3$) have been chosen as general substrate. These molecules, well-known in our laboratory, are stable, simple to synthesize, and have modulable functional groups compatible with the chiral organocatalyst (agent) ensuring its proximity to the reactive site. These compounds homolyze in response to an external stimulus. The **objectives** are: (1) To study the activation of stereoselective radical addition in presence of external chiral agent; (2) to apply stereoselective radical mono-addition to iterative addition.



- **Chiral agent close to the reactive site**
- **Stereocontrol**
- **1,3-nonadjacent stereocenters**

Profile. The candidate should demonstrate a strong background in **organic synthetic chemistry**. She/he must own a PhD academic degree in chemistry (organic, radical chemistry, catalysis or related). A previous experience in homogeneous enantioselective catalysis will be an asset. To be eligible, candidate must have **defended his/her PhD after 30 May 2022**.

To apply. Applicants are invited to submit a CV including 2/3 reference contacts, a letter of motivation, and a short research summary. Recommendation letters are also welcome. Application deadline: **1st August, 2024**.