

PhD Student Position in Iodine/Fluorine Radiochemistry

Project Title: Late-stage approach for radioiodination and radiofluorination of arenes via C-H borylation

Project Overview: We are seeking a highly motivated and dedicated PhD student to join our research team. This project aims to develop a novel radioiodination/radiofluorination technique through C-H borylation. Led by Pr. Thomas Cailly, our synthetic methodology and radiochemistry group specializes in radiochemistry and is dedicated to pioneering new methodologies in the field. The project will involve collaboration with leading experts in C-H borylation chemistry and medical imaging.

Modern medical imaging, such as PET and SPECT, relies on the use of molecules known as radiotracers. These compounds, labeled with very small amounts of radioactive elements such as iodine or fluorine, make it possible to visualize and monitor the function of organs, tumours, or the brain in humans. However, their development is complex, time-consuming, and costly, which limits innovation in nuclear medicine. This project aims to address this challenge by developing a state-of-the-art chemical method to produce radiotracers based on a late-stage functionalization (LSF) approach, an innovative strategy that enables the introduction of a radioactive isotope directly onto an existing molecule, without the need to rebuild the entire structure from scratch. This method builds on recent advances in the field and is supported by a proof of concept already achieved by the team. More specifically, this project seeks to exploit an original chemical reaction that allows the activation of highly stable carbon-hydrogen bonds, enabling the introduction of radioactive iodine or fluorine in a single step. This strategy is expected to facilitate access to new radiotracers, while improving their quality and reducing production costs.

Qualifications:

- Master's degree in organic chemistry or a related field.
- Strong background in synthetic organic chemistry.
- Experience with organometallic chemistry is desirable.
- Experience with HPLC is desirable.
- Excellent communication and teamwork skills.
- Ability to work independently and efficiently manage research projects.

(An experience in radiochemistry is not mandatory)

Benefits:

- Full-time PhD position starting in October 2026.
- Access to state-of-the-art research facilities and resources.
- Radiation safety training.
- Opportunities for professional development and international collaboration.
- Supportive research environment with mentorship from experienced faculty members.

Application Process: Interested candidates should submit a cover letter, CV, academic transcripts, and contact information for two references to Pr. Thomas Cailly at thomas.cailly@unicaen.fr or Pr. Valérie Collot at valerie.collot@unicaen.fr. Review of applications will begin immediately and continue until the position is filled.



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About the Research Group: The synthetic methodology and radiochemistry group led by Pr. Thomas Cailly is dedicated to advancing the field of radiochemistry and developing innovative radiolabeling techniques for medical imaging applications. Our collaborative and interdisciplinary approach fosters groundbreaking discoveries and contributes to the advancement of molecular imaging technologies.