

Postdoctoral position in organic chemistry – CarboD project

Subject: Synthesis of deuterated carbohydrates using batch and flow chemistries

Location: This position will involve a close interaction between one team from the CEA: Department of bioorganic chemistry and isotopic labeling, CEA-Saclay, 91191 Gif sur Yvette – France and one team of CNRS-ICSN 91191 Gif sur Yvette – France. Both laboratories are located near Paris.

The internship will be completed at the Tritium labeling laboratory ([Frédéric Joliot Institute for Life Sciences - Tritium Labeling Laboratory \(cea.fr\)](https://cea.fr)) and at Chemical Biology department of ICSN (<https://icsn.cnrs.fr/en/research/cb>)

Job description: Position is funded by a grant from Labex CHARM3AT. Deuterated carbohydrates and glycoconjugates are essential tools in numerous fields such as drug development, diagnostics, elucidation of biomacromolecules, analyses of biological samples by mass spectrometry or the study of biomolecular dynamics. However, despite their high added-value, access to deuterated glycosides is currently challenging and expensive. This problem is largely due to the lack of universal methods for the labelling of a large variety of glycosides with the desired regioselectivities. Project CarboD aims at developing innovative approaches for the hydrogen/deuterium exchange of carbohydrates. Methods using metallic catalysts will be developed to incorporate deuterium atoms regioselectively without requiring the synthesis of labelled precursors. Surface engineering of catalysts will be carried out to gain access to useful and diversely labelled carbohydrates: regioselectively mono- and multi-labelled up to per-deuterated ones. Protecting group strategies using directing groups able to chelate the metallic catalytic species and transient protecting groups targeting diol systems, will also be investigated to allow for chemo- and hence regio-selective hydrogen isotope exchanges (HIE). The implementation of flow chemistry will also permit a rapid and low-cost gram-scale production. The main objectives of the post-doctoral researcher will be to develop new methods for the chemical labeling of carbohydrates. He/She will work on carbohydrates protecting group strategies and on hydrogen direct isotope exchange using both batch and flow chemistries.

Domains: Organic chemistry / Glycochemistry / Isotopic Labeling / Batch and Flow Chemistries

Candidate profile: Candidates should have:

- Strong skills in organic chemistry
- A PhD in organic chemistry
- Excellent knowledge, both written and oral, of English
- A real skill to work in large collaboration and autonomously
- Strong interpersonal, organizational and communication skills are a must.

Starting date: October 2022 (12-months position)

How to apply: Applicants should send their CV, a cover letter motivating their interest in the position, a list of current publications and the names and addresses of two referees to Sophie FEUILLASTRE (sophie.feuillastre@cea.fr) and Stéphanie NORSIKIAN (stephanie.norsikian@cnrs.fr).

Publications (selection):

1) A. Palazzolo, *et al.*, *Angew. Chem. Int. Ed.* **2020**, *59*, 20879-20884; 2) M. Lepron, *et al.*, *Acc. Chem. Res.* **2021**, *54*, 1465-1480; 3) C. Tresse, *et al.*, *Chem. Eur. J.* **2021**, *27*, 5230-5239; 4) S. Norsikian, *et al.*, *Angew. Chem. Int. Ed.* **2020**, *59*, 6612-6616.