

## Postdoc position:

### Light-controlled ions binding investigation of photoswitchable glycoazo-macrocycles

A 1-year post-doctoral position funded by the LabEx Charmmmat from Paris-Saclay University is opened.

Photoswitchable macrocyclic compounds allow dynamic control of molecular shape, conformation or helical superstructures, photo-controlled extraction of ions and molecules, and so on. Recently, the PPSM lab (Laboratoire de photophysique et photochimie supramoléculaires et macromoléculaires) has developed several series of azobenzene-based glycomacrocycles as chiral photoresponsive macrocycles which can be easily and reversibly interconverted between *E*- and *Z*-configured azobenzene macrocycles upon UV-Vis illumination, with good conversion yield, significant change in molecular shape and interesting chiroptical properties. The objective of this multidisciplinary project is to investigate the light-controlled ions recognition properties, as well as the influence of ion complexation on the chiroptical switching of azobenzene-based photoswitchable glycomacrocycles by UV-vis and NMR spectroscopies, mass spectrometry, circular dichroism spectroscopy and theoretical calculations. This investigation is expected to advance our knowledge on the design criteria to develop multistimuli-responsive systems.

The postdoctoral fellow will be hired by PPSM (ENS Paris-Saclay, CNRS), where UV-vis and NMR experiments, as well as DFT calculations will be carried out. Mass spectrometry characterization will take place in the « Laboratoire Analyse, Modélisation, Matériaux pour la Biologie et l'Environnement » (LAMBE, CNRS, Université d'Evry Val d'Essonne).

#### Main duties and responsibilities:

- Screening of metal ions complexation on *E*- and *Z*-glycomacrocycles by UV-Vis spectroscopy and mass spectrometry.
- Investigation of the dynamic control of the ion complexations and chiroptical switching by <sup>1</sup>H NMR and mass spectrometry, as well as UV-vis spectroscopy combined with circular dichroism spectroscopy.
- Theoretical study (DFT and TD-DFT calculations) to rationalize the obtained results.

#### Required Knowledge, Skills, and Abilities:

The applicant should have completed a PhD in chemistry. We are looking for a highly motivated Ph.D. candidate with a strong background in organic/organometallic chemistry. Experience/interest in photophysical properties will be an added value. In addition, a strong motivation for research and good communication skills are required (fluent English or French speaking is mandatory). Experience in photophysical or photochemical studies of photoactive molecules, NMR spectroscopy, mass spectrometry and molecular modeling are additional assets.

Starting date: October 2022

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