

## PhD position (M/F) in metalloenzyme and bioinspired metallopeptides in Marseille

**Offer description.** A PhD (expected starting date: autumn 2025) is available at the “Institut des Sciences Moléculaires de Marseille” (iSm2, UMR 7313) within the frame of an ANR-funded project.

**Project.** The project will be conducted within the frame of an ANR-funded project (LPMO-PEPS ANR-24-CE07-6490). The project is centered on the development and evaluation of bioinspired catalysts for the valorization of recalcitrant polysaccharides from biomass (such as cellulose or chitin) for biosourced chemicals or biomaterial applications. We will take inspiration from fungal and bacterial copper-containing enzymes (Lytic Polysaccharide Monooxygenases) to develop catalytically-active metallopeptides targeting recalcitrant polysaccharides. LPMO catalyze the challenging oxidative cleavage of polysaccharide by hydroxylation of C-H bonds at the glycosidic linkage, leading to chain breaks.

The PhD candidate will join the [Biosciences](#) group at iSm2 (Marseille). This group has a strong expertise in the study of metalloenzymes and the development of bioinspired models. He/She will evolve in a multidisciplinary environment (chemistry / biology / biophysics) and will gain experience in a range of techniques used in this project at the interface of chemistry and biology.

Within this project studies will be conducted on a chosen LPMO model enzyme to investigate the effect of first and second coordination sphere residues on the structural and functional properties of the enzyme. The results will be used to guide the design of bioinspired metallopeptides that will be designed in the group of [Christelle Hureau](#) in Toulouse. Both enzymes and peptides will be investigated in parallel.

The candidate will be involved in the following tasks:

- Production of recombinant LPMOs and variants
- Characterization using physicochemical approaches (spectroscopic tools, redox properties etc.
- Functional investigations of the enzymes and peptides on soluble substrates
- Functional investigations of the enzymes and peptides on recalcitrant polysaccharides
- Mechanistic investigations

**Keywords:** *bioinorganic chemistry, bioinspired copper peptides, biomass, polysaccharides, catalysis*

**Candidate profile and skills.** Highly motivated candidates (master degree or equivalent with excellent academic records) with a background in chemistry and / or biochemistry and / or biophysics are strongly encouraged to apply.

Previous laboratory experience in coordination chemistry, protein chemistry, metalloenzyme or any other field that could benefit the project would be valuable but is not mandatory

**Applications.** Applications have to be submitted **exclusively** online *via* the CNRS job portal (<https://emploi.cnrs.fr/Offres/Doctorant/UMR7313-ARISIM-007/Default.aspx?lang=EN> )

-A CV including a summary of the thesis work and of other research experiences

-A motivation letter

*In one of the above files, please include the name of two references*

### Contact details:

Dr. [A. Jalila Simaan](#), Institut des Sciences Moléculaires de Marseille, mail : [jalila.simaan@univ-amu.fr](mailto:jalila.simaan@univ-amu.fr)

Dr. Bruno Faure, Institut des Sciences Moléculaires de Marseille, mail : [bruno.faure@univ-amu.fr](mailto:bruno.faure@univ-amu.fr)