Post-doctoral Position in Chemistry

Supramolecular Photoredox Catalysis

Starting date: Flexible from 05/01/2026 to 31/03/2026
Duration : 2 years
Application : Before 31/12/2025
Workplace : Université de Bordeaux, Institut des Sciences Moléculaires, « Nanostructures Organiques » group
Funding : French National Research Agency (ANR)
Net Salary : 2200 to 2500 €/month based on experience

Context and research project:

The selective functionalization of poorly reactive C(sp^3)−H bonds in mild reaction conditions, in particular that of methane, is a long standing and major objective in the area of catalysis. Given its abundance in natural gas and biogas, methane is a highly attractive bio-sourced C1 chemical for use in the preparation of added-value chemicals. In that context, the chlorine atom $Cl^{\bullet}$ has been recognized as a powerful Hydrogen Atom Transfer (HAT) reagent to promote the functionalization of strong C(sp^3)−H bonds, including that of CH_4. In the area of $Cl^{\bullet}$ reactivity applied to C(sp^3)–H bond functionalization, major breakthroughs emerged in the last decade with the advent of dual catalytic photoredox/HAT processes. Building on our preliminary results (*Angew. Chem*. *Int. Ed*. **2024**, e2024022964) we expect to provide highly active photocatalysts for the functionalization of light alkanes, but also reveal the potential of self-assembling co-catalysts for the discovery of more efficient dual photocatalytic processes.
The project will be conducted at the Institut des Sciences Moléculaires (https://www.ism.u-bordeaux.fr/) within a consortium of two partners (Jean-Marc Vincent from the NEO group, and Thierry Tassaing from the GSM group) having strong expertise in organic/supramolecular chemistry, photocatalysis, high pressure chemistry, spectroscopies and theoretical chemistry.

Candidate profile:

- PhD degree in molecular chemistry with strong background in organic synthesis, skills for multi-step synthesis, supramolecular chemistry and/or photoredox catalysis, expertise in characterization techniques (NMR 1D and 2D, mass spectrometry, absorption/emission spectroscopy, LC-MS) and purification techniques (column chromatography, HPLC, GC…).
- High motivation to work in a multidisciplinary project.
- Ability to conduct independent research and demonstrate open-mindedness, curiosity, and organization.
- English written and oral communication skills.

Host Laboratory:

NEO research group (https://www.ism.u-bordeaux.fr/groupe-de-recherche/nano-structures-organiques) has a long-standing experience in the design of photoactive compounds, including photoredox catalysts and the study of their catalytic properties and photophysics (*Angew. Chem. Int. Ed.* **2024**, e2024022964; *Adv. Synth. Catal*. **2022**, *24*, 4266; *Org. Biomol. Chem*. **2021**, *19*, 5800; *Angew. Chem. Int. Ed*., **2012**, *51*, 7137.

Application:

A cover letter, the contact details of two referees and a detailed CV (Master grades, summary of the project results PhD/Post-doc, publications) should be sent to Jean-Marc Vincent at:
jean-marc.vincent@u-bordeaux.fr