PhD position

Light-controlled supramolecular chirality in helical foldamers (HELIGHT)

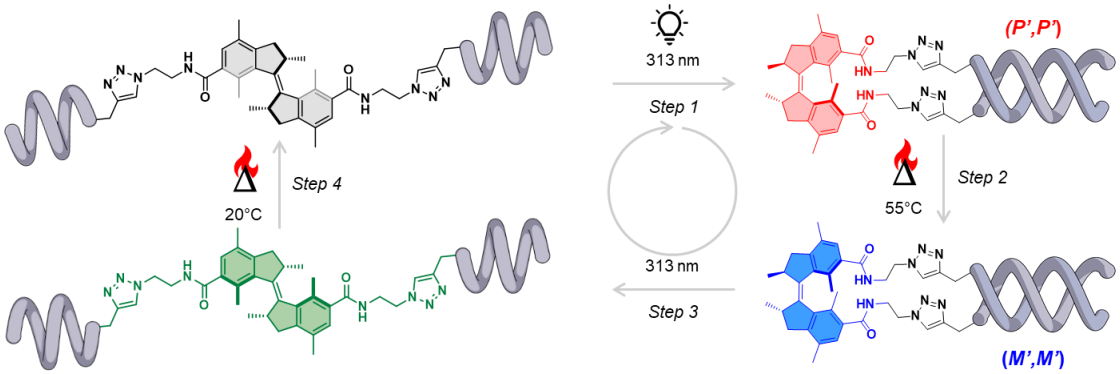
Host institution: University of Angers, FRANCE
Laboratory: MOLTECH-Anjou (UMR CNRS 6200)
Supervision: Prof. David Canevet
International partner: Prof. Ben L. Feringa (University of Groningen, Netherlands)
Starting date: October 2026
Duration: 3 years

Research context

Helical foldamers are artificial molecular architectures capable of adopting well-defined folded conformations and forming complex supramolecular assemblies such as double or multiple helices. Controlling the structure and chirality of these systems is a major challenge in supramolecular chemistry, especially when aiming to develop responsive molecular materials.

Based on a seminal proof-of-concept (Aidibi *et al. Angew. Chem. Int. Ed.* **2025**), the **HELIGHT project** aims to develop systems in which **light and heat can control the chirality and the supramolecular organization of helical foldamers** using **unidirectional rotary molecular motors**. These systems will allow reversible switching between different supramolecular states and correlate these structural transitions with optical responses such as **circular dichroism (CD)** and **circularly polarized luminescence (CPL)** (Hardoin *et al. Angew. Chem. Int. Ed.* **2026**).

Ultimately, the project seeks to establish **predictive rules to control supramolecular chirality using external energy inputs**, opening new perspectives in responsive photonic molecular materials.



PhD project

The PhD student will lead the design and study of **motor-controlled helical foldamers** capable of switching the helical multiplicity (single vs double helices), their supramolecular chirality and hence, their chiroptical properties.

The work will involve three main components: **1. Molecular design and synthesis, 2. Supramolecular characterization, 3. Stimuli-responsive switching**

International mobility

The PhD candidate will spend **at least eight months in the group of Prof. Ben L. Feringa at the University of Groningen (Netherlands)**.

During this period, the student will receive training in synthesis and characterization of **unidirectional rotary molecular motors, photochemical activation** and spectroscopic analysis under irradiation, advanced methods related to molecular motor dynamics.

This mobility will provide a unique interdisciplinary training combining **organic synthesis, supramolecular chemistry and molecular machines**.

Candidate profile

Applicants should hold (or be about to obtain) a **Master's degree in chemistry** with a background in organic chemistry.

Important skills and interests

- **Organic synthesis, ideally under inert atmosphere** (Schlenk techniques)
- Strong interest in **physical chemistry** (ex: NMR) **and supramolecular chemistry**
- Proactive and **self-driven personality**
- **Good level of English**
- Scientific curiosity

Experience with spectroscopy (NMR, UV-Vis, CD) or photochemistry will be considered an advantage.

Research environment

The project will be mainly conducted at **MOLTECH-Anjou (University of Angers)** in the frame of the EUR LUMOMAT (http://www.lumomat.fr), a leading programme in molecular materials. As such, the PhD student will benefit from mobility grants for collaboration purposes and congresses, and possibly from an Excellence fellowship.

The PhD student will benefit from access to state-of-the-art spectroscopic platforms and will work within an international collaborative environment between Angers and Groningen.

If interested, the PhD candidate may be offered up to a 64-hour teaching load per year.

Application

Applications should be sent to David Canevet (david.canevet@univ-angers.fr) before **April, 30th**:

- a CV;
- a cover letter;
- contact information for 2-3 referees.

Shortlisted candidates will be invited for an interview.