

PhD Student Position in Organic Chemistry and photophysics (funded by the ANR)

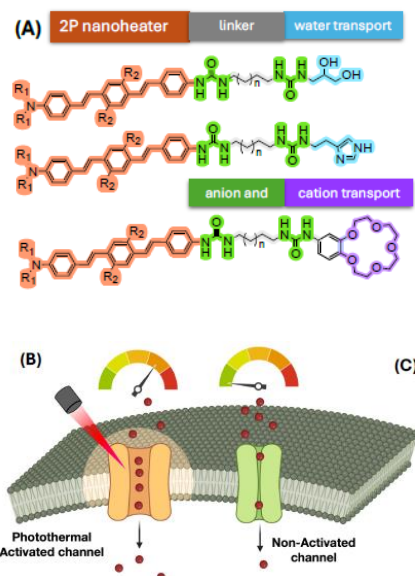
Triggered photothermo-translocation in ion and water channels by two-photon activated molecular transducers (ANR PRC ChanPulse)

Location: L2CM Laboratory, Université de Lorraine, Nancy, France

Duration: 3 years, starting Oct. 2024

Supervisors of the PhD thesis: Pr. Andréea Pasc - Dr. Yann Bernhard – Dr. Sabrina Touchet

Project: The controlled transport of ions and molecules across lipid bilayers through specific channels is a crucial mechanism for living cells. Temperature sometimes plays a critical role in the regulation of these channels. In the context of phototherapy, modulating the activity of those channels through light irradiation in a safe and controlled manner may lead to new therapeutic strategies, beyond optogenetics. In addition, two-photon absorption (2PA) technologies are particularly well-suited for this purpose to achieve precise spatiotemporal control. In these contexts, the main objective of the **ChanPulse** project is to design, synthesize, and fully characterize an entirely new family of molecular photothermal transducers (A), that can self-assemble into channels within phospholipid bilayers and that can modulate the ion or water translocation through controlled and localized 2P activation (B).



Position: The PhD work will consist in *i)* the multistep **organic synthesis** of 2P absorbing molecular photothermal transducers and *ii)* the **photophysical/photothermal studies** of transducers at molecular and self-assembled levels.

Profile: You should hold a Master degree in organic chemistry or related field, with practical experience in the lab. Interest/experience dyes chemistry or spectroscopy study would be appreciated. Creativity, autonomy, reliability, and organization skills are highly required, together with a strong interest in a multidisciplinary approach. The project offers an **exceptional opportunity for a highly motivated student to develop a broad range of competencies** within a multidisciplinary consortium.

Application form: Applications should be sent to Dr. Yann Bernhard (yann.bernhard@univ-lorraine.fr) and Pr. Andreea Pasc (andreea.pasc@univ-lorraine.fr). It should include a detailed CV, a cover letter highlighting how you meet the criteria, and your M1/M2 (or equivalent) grades reports.

Host laboratory: The Laboratoire Lorrain de Chimie Moléculaire, located in Vandoeuvre-les-Nancy, France, is a young laboratory dedicated to molecular chemistry and its applications. It brings together ≈ 70 members including synthetic chemists, physical chemists, nanomaterials specialists and biologists.

