

PhD Student Position in Organic/ Polymer Chemistry (funded by the ANR)

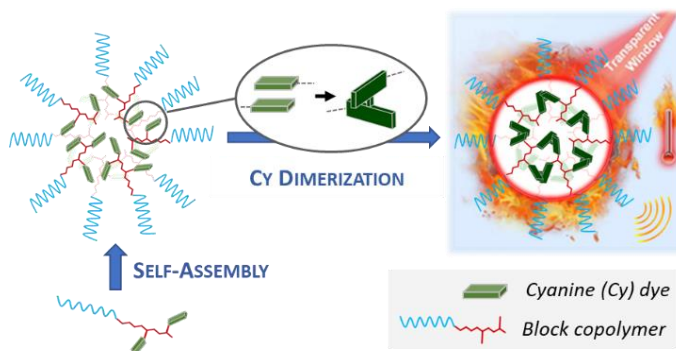
Cyanine Dimerization-Promoted Polymeric Micelles Core-Crosslinkage for Phototheranostics (ANR CD-Mix)

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

Duration: 3 years, starting Sept.-Oct. 2024

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

Project: Photothermal therapy (PTT) has garnered increasing interest as a potential alternative to conventional therapeutic methods. This technique utilizes molecules or nanoparticles capable of efficiently converting light into heat. Highly challenging research aspects in the field concern the development of fully organic agents with high biosafety, light absorption in the 700-900 nm biologically transparent window, and that provide efficient PTT effect combined with photoacoustic image-guiding strategy. The **CD-Mix** project aims to investigate the use of cyanine polymer-conjugates for the fabrication of core-cross-linked micelles through the self-assembly of conjugates followed by dimerization of cyanine dyes within micelles, ultimately facilitating image-guided PTT applications.



Position: The work will consist in multistep **organic synthesis** of Cy-dyes, **polymer synthesis** of biocompatible polymers through controlled methodologies, **self-assembly** and micelles **core-crosslinked** studies, **nanoscale and photophysical characterizations**, as well as assessment of properties relevant to PTT/PAI applications.

Profile: You should hold a Master degree in organic chemistry or related field, with practical experience in the lab. Interest/experience in polymer chemistry, dyes chemistry or nanoparticle synthesis 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 research areas that hold significant academic and industrial relevance.

Application form: Applications should be sent to Dr. Yann Bernhard (yann.bernhard@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.

