

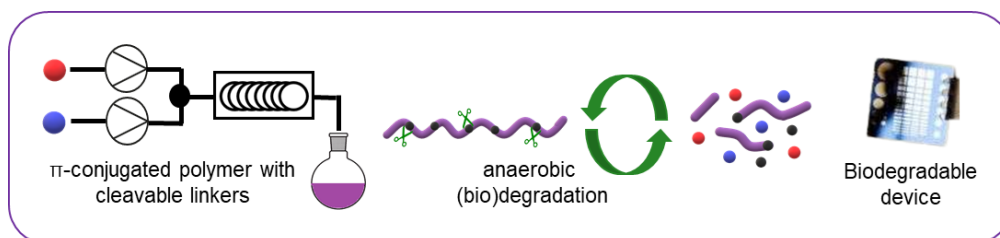


6-months Research Internship (Master 2)

BOATFLOW: Biodegradable all-Organic Transistors: continuous FLOW synthesis of semiconducting polymers

Scientific Description. π -Conjugated polymers are invaluable for organic electronic devices such as **organic field-effect transistors** found in RFID or biosensors. Traditional synthetic methods rely on toxic reagents and metal-catalysts leading to batch-to-batch variation and limiting their environmental sustainability and recyclability. The chemical structure of these polymers limits their biodegradability. One solution could be the introduction of **cleavable chemical units** along the polymer backbone to induce a degradation while retaining their conjugation. **Polyazomethines**, made with imine linkers, are obtained *via* greener synthetic routes and can be produced on a large scale thanks to **continuous flow techniques**.

The aim of this internship is to **synthesize polyazomethines by continuous-flow techniques** for a fast screening to select the best semiconducting polymers regarding their **optoelectronic properties**. Then, these polymers will be integrated into organic field-effect transistors as the active layer. The project goal is to fabricate a **fully biodegradable all-organic transistor** based on polyazomethines. **Biodegradation** assessment will be evaluated as closely as possible to the actual conditions of use and/or disposal of the final device depending on the chosen application: soil, industrial compost, waste water and body fluid.



Techniques. Organic synthesis, polymer synthesis (polycondensation), NMR spectroscopy, UV-Vis spectroscopy, IR, Size-Exclusion Chromatography.

Desired Profile. A background in organic or polymer chemistry is required. The project involves degradation studies, so an interest in sustainable chemistry is desirable. The student should be organized, rigorous, curious and autonomous.

Supervision. The project will be supervised by [Adèle Gapin](#).

Application. To apply, please send your CV and cover letter to adele.gapin@u-bordeaux.fr

Starting Date. Beginning of January 2027.