

Sujet de stage de Master 2

Laboratoire : Département de Chimie Moléculaire
Directeur : Didier Boturyn

Intitulé de l'équipe : SeRCO

Responsable : Jean-François Poisson

Nom et Qualité du Responsable du Stage : Jean-François Poisson (Pr) HDR oui

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Parcours de Master 2 : Organic Synthesis (SOIPA)

Titre du sujet : New Reactivity of Ketenes using Flow Chemistry: synthesis of GABA analogues

Objectifs visés du stage :

Development of Flow conditions for the preparation of unstable species such as Ketenes and their use in organic synthesis. In parallel, batch reactions will also be studied.

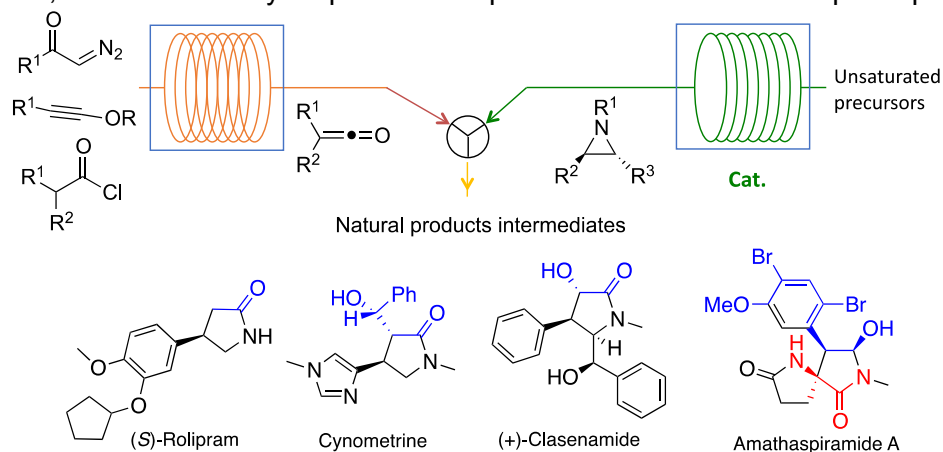
Intérêts pédagogiques et compétences visées :

Optimisation of Flow conditions. Reactions under anhydrous conditions. Multistep synthesis. Purification and characterization/analytical techniques.

Résumé :

γ -Aminobutyric acid (GABA) analogues are of great interest in medicinal chemistry, because of their essential importance in nervous system functions. Of particular interest is the cyclic GABA analogue 4-(3-cyclopentyloxy-4-methoxyphenyl)pyrrolidin-2-one (Rolipram), known for its potent inhibitor activity of the cardiac cyclic AMP phosphodiesterase, found in brain tissue.

Our research group has recently found that aziridines can react with ketenes, affording lactams in excellent yields. With unsymmetrical ketenes, a single diastereoisomer is observed. The project aims at exploring the scope of this new transformation, in classical "batch" chemistry and also in flow chemistry, to efficiently access a wide diversity of GABA analogues. The laboratory is fully equipped with standard organic synthesis apparatus, and has recently acquired a complete flow device to develop this project.



Approches & matériels utilisés (5 lignes max) :

The student will use most of the techniques in organic synthesis (inert atmosphere, low temperature, small quantity reaction), as well as numerous analytical methods to determine the structures of the compounds obtained (NMR, supercritical CO₂ HPLC, UHPLC-MS, Mass). The student will develop flow reaction conditions.

Domaines de compétences souhaitées du candidat (3 lignes max):

Good level in organic chemistry, experience in separation techniques and analysis methods; use of bibliographic databases.

Dates du stage : January - June 2023