UFR CHIMIE & BIOLOGIE Université Grenoble Alpes

Master in Chemistry

Sujet de stage de Master 2 (1 page max.)

Laboratoire : Département de Chimie Moléculaire (DCM) UMR 5250
Directeur : Didier Boturyn

Intitulé de l'équipe : SeRCO **Responsable :** Jean-François POISSON
Nom et Qualité du Responsable du Stage : Benjamin DARSES, CRCN CNRS **HDR non**
Adresse : 301 rue de la Chimie, 38058 GRENOBLE CEDEX 9
Tél : 04 76 51 48 40 **email :** benjamin.darses@univ-grenoble-alpes.fr

Parcours de Master 2 (*Rayer la/les mention(s) inutile(s)*) :

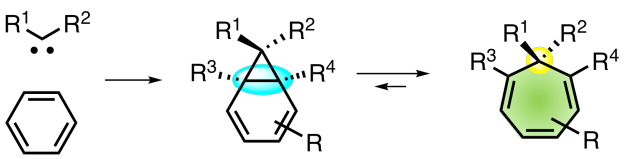
~~Chemistry for Life Sciences (CLS)~~
~~Polymers for Advanced Technologies (PTA)~~
Organic Synthesis (SOIPA)

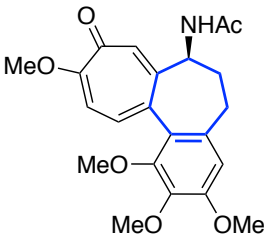
Titre du sujet : *Asymmetric synthesis of polycyclic structures using the Buchner reaction*

Objectifs visés du stage (5 lignes max) : The project will involve the synthesis of carbene precursors for the intramolecular Buchner reaction. This reaction performed under rhodium catalysis will afford enantioenriched skeletons.

Intérêts pédagogiques et compétences visées (5 lignes max) :
Synthesis of the substrates for the Buchner reaction using classical reactions and catalytic processes.
Gaining independence in bibliographic research for reaction conditions.
Development of manipulating skills and purification techniques.
Characterization of the compounds and interpretation of the analyses for structure assignment.
Improvement of communication skills.

Résumé : The Buchner reaction is the addition of a carbene to an aromatic ring, leading to 7-membered carbocyles that are present in the structure of a wide number of natural products showing very interesting biological activities. The reaction can be catalyzed by metal complexes, in particular easily prepared and very efficient rhodium catalysts. Among the accessible skeletons, bi- and tricyclic molecules have been synthesized using the intramolecular Buchner reaction. The asymmetric version of this reaction is studied in the SeRCO team and affords excellent results (95% yield and 92% ee). This project will therefore consist in the synthesis of the carbene precursors for the Buchner reaction, the preparation of novel polycyclic compounds using the catalytic Buchner reaction and some chemical functionalizations of the polycyclic products.





Colchicine

Approches & matériels utilisés (5 lignes max) : The student will use classical organic synthesis methods (inert atmosphere, low temperature, parallel screening…) as well as modern catalysis tools.
Different analytical techniques (NMR, Mass Spectrometry, IR…) will be used to assess the structure of the synthesized compounds.

Domaines de compétences souhaitées du candidat (3 lignes max): Good knowledge of Organic Chemistry and previous experience in synthesis and purification techniques.
Some experience in classical analytical methods (NMR, Mass Spectrometry…).

Dates du stage : January-June 2022