

Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : JUBAULT Given names : PHILIPPE

Status (prof., assistant prof., ...) : Professor of Chemistry

Laboratory : Institut CARMeN - UMR 6064 Website address : <http://www.lab-cobra.fr>

Institution : Institut National des Sciences Appliquées - Rouen Website address : <https://www.insa-rouen.fr/recherche/chercheurs/pjuba>

Scientific competence of the supervisor:

Our research group is interested in the development of new methodologies for the construction of relevant fluorinated building blocks and especially cyclopropanes. In that context, we mainly focus on the design of metal catalyzed or mediated reactions. Since the last 5 years, we devoted lots of efforts to achieve the access of fluorinated, difluoromethyl and trifluoromethyl cyclopropanes using catalytic enantioselective approaches.

Two major publications in the field proposed for the PhD :

1. Asymmetric Synthesis of fluoro, fluoromethyl, difluoromethyl, and trifluoromethyl cyclopropanes. Pons, A.; Delion, L.; Poisson, T.; Charette, A. B.; Jubault, P. Acc. Chem. Res. 2021, 54, 2969–2990.
2. Ru(II)-Catalyzed Enantioselective Synthesis of 1,2-trans-Disubstituted PhSO₂CF₂-containing Cyclopropanes. Zhao C., Besset, T. ; Jubault, P. Adv. Synth. & Cat. 2024, 366, 3423.

Website address of the personal page : <https://www.insa-rouen.fr/recherche>

Supervisor's email : philippe.jubault@insa-rouen.fr

Description of the research work proposed for a PhD Topic # (see list) : II-13

Title : Developments of new accesses to strained bicycles containing a cyclopropane unit using modern approaches.

Subject :

Nowadays, cyclopropane chemistry is a research field of prime importance as cyclopropane-containing molecules are compounds of interest. Consequently, the quest for new methodologies to access functionalized cyclopropanes and their incorporation in strained bicycles renders this blooming research area very appealing for scientists. Recently, our research group, "Synthesis of fluorinated molecules" headed by Prof. P. Jubault, has successfully designed new fluorinated reagents and developed innovative fluorinated, CF₃ and CF₂H cyclopropanes. As part of our ongoing research program focusing on the development of straightforward access to Fluorinated, trifluoromethyl and difluoromethyl cyclopropanes we envisioned the synthesis of strained bicyclic structures containing a cyclopropane or a cyclopropane bearing a fluorinated group (CF₂H or F for example). To access these types of structures, we plan to use modern approaches including photocatalysis, metal catalysis and electrosynthesis.

To support this research program we are looking for an outstanding and highly motivated candidate to pursue his PhD within our group.

Keywords :

Cyclopropanes ; Strained bicyclic structures; photocatalysis; metal catalysis

Expected collaborations :

Background required from the applicant :

A Master degree in Organic Chemistry, good knowledge of the analytical methods (NMR, MS...)

Existence of a PDF file detailing the proposal ("yes" or "no") : yes

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