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Title: "Development of new methodologies in organofluorine and cyclopropane chemistry using modern approaches (C-H activation and photochemistry)."

Position: Full Doctorate

Keywords: fluorine, cyclopropane, C-H activation, catalysis, asymmetric synthesis

Nowadays, organofluorine chemistry is a research field of prime importance as fluorine-containing molecules are compounds of interest for pharmaceuticals, agrochemicals and material science. The cyclopropane motif fascinates organic chemists, in fact this intriguing and smallest cycloalkane is present in a phalanx of natural and non-natural bioactive molecules. This important constrained unit has been applied to alter both the metabolic stability and bioavailability of pharmacologically active molecules.

Due to this, there has been interest in developing new approaches to synthesize this key structural motif. In that context, we plan to develop original approaches using modern methodologies such as C-H activation and photochemistry.

As part of our ongoing research program focusing on the development of straightforward access to monofluoro or polyfluorinated cyclopropanes we envisioned the synthesis of highly functionalized cyclopropanes bearing at least one fluorine atom or one polyfluoro group such as CF₃, CF₂H or SF₅ from non-fluorinated cyclopropanes as starting materials. For that purpose, we plan to use modern methodologies such as C-H activation or/and photocatalysis.

This research program will be carried out *in collaboration with Professor André B. Charette from the chemistry department of the University of Montréal*. During the PhD, a 3 or 6 months' period would be scheduled in Pr. Charette's team in Montréal in order to develop the methodology using microfluidic conditions.

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

Requirement for the position: a Master degree in chemistry

URL: <http://www.lab-cobra.fr/?equipe=synthese-de-biomolecules-fluorees>

Laboratory: UMR 6014 CNRS- C.O.B.R.A, Université et INSA de Rouen
Ecole Doctorale Normande de Chimie N° 508

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