PhD student position available @ ICN in Nice
Novel Gold Complexes – A New Paradigm for Asymmetric Catalysis

Cycloisomerization and domino reactions have been studied extensively because they rapidly and efficiently build structural complexity from much simpler acyclic compounds.\(^1\) The field of homogeneous gold catalysis\(^2\) has been the subject of intense investigation during the past decade, elevating gold(I) complexes to among the most useful catalysts for a diverse range of cycloisomerization reactions. Despite significant progress in the development of enantioselective gold(I) catalysis,\(^3\) challenges still remain largely as a result of the linear geometry that places the active site distant from the chiral information. This challenge can potentially be addressed by employing square-planar geometry gold(III) complexes as catalysts; however, the majority of gold(III) catalyzed reactions employ simple gold halide salts as catalysts or ligands that produce unstable or unreactive complexes.\(^4\)

In the course of our endeavor towards gold catalysis,\(^5\) we have proposed recently the synthesis and applications of a new gold(I) complex.\(^6\) High activity, regio-, chemo-, and stereoselectivities were obtained for hydroelementation and domino processes, underlining the excellent performance (TONs and TOFs) of IPy-based ligands in gold catalysis. The gold-catalyzed domino reactions of 1,6-enynes gave rise to functionalized heterocycles in excellent isolated yields under mild conditions.

The project concerns the synthesis of novel and original Au(III) complexes starting from Au(I) complexes, as well as their use in challenging gold-catalyzed transformations. We will focus on transformations that have no precedent versions under asymmetric conditions.\(^2\) Applications in flavors and fragrances will be in the center of our project.

Application

This 3 years PhD project will start in October 2020. It is addressed to highly qualified and talented students with an enthusiastic interest in organic chemistry and asymmetric catalysis. Scientific curiosity, the ability to work in a team, and a good mastery of the English language are essential.

Net salary for the grant from the “Ministère de l’Enseignement Supérieur et de la Recherche”: around 1 400 € / month + teaching opportunity

Applications shall be sent and include a motivation letter, a detailed Curriculum Vitae, transcripts of master studies.

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