

# Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website [www-csc.utt.fr](http://www-csc.utt.fr))

Supervisor's name : MOEBS-SANCHEZ Given names : Sylvie

Status (prof., assistant prof., ...) : Assistant Professor

Laboratory : ICBMS-COB Website address : <http://www.icbms.fr/>

Institution : INSA-LYON Website address : <http://www.insa-lyon.fr>

Scientific competence of the supervisor:

General multi-step organic synthesis. Valorization of bio-resources. Fonctionnalization of polyols (carbohydrates, cyclitols) targeting monomers, surfactants or bioactive compounds.

Two major publications in the field proposed for the PhD :

1. C. Verrier, S. Moebis Sanchez, Y. Queneau and F. Popowycz, *Org. Biomol. Chem.*, 2018, 16, 676-687.
2. X. Li, L. Grand, T. Pouleriguen, Y. Queneau, P. da Silva, Y. Rahbé, J.-L. Poëssel and S. Moebis-Sanchez, *Org. Biomol. Chem.*, 2016, 14, 2487-2497.

Website address of the personal page :

**Supervisor's email :** [sylvie.moebis@insa-lyon.fr](mailto:sylvie.moebis@insa-lyon.fr)

**Description of the research work proposed for a PhD** **Topic # (see list) :** III-11

Title : From biobased sugar platforms towards new spirocycles or cyclopenta-[b]-indoles : intra or intermolecular aza-Piancatelli reactions in action.

Subject :

Biobased sugar platforms such as furfural or 5-hydroxymethylfurfural (HMF) are privileged candidates as primary renewable building blocks, readily available from fructose, glucose, sucrose, cellulose and inulin. Bifunctional HMF specially features an interesting intrinsic chemical potential. To supplement previous and current investigations toward the development of different reactions from biobased products, among HMF, the proposed PhD project will focus on exploring the synthesis of new azaspirocycles resulting from an intramolecular aza-Piancatelli reaction of new substrates prepared from HMF but also the possibility of an original synthesis of cyclopenta[b]indole derivatives with potential bioactive properties via an intermolecular azaPiancatelli/ C-C coupling reactions sequence. Multi-step synthesis of novative intermediates, development of asymmetric organocatalyzed reactions and further elaboration of complex heterocycles will be the challenging promises of this project.

Keywords :

5-HMF, aza-Piancatelli, azaspirocycles, cyclopenta[b]indoles

Expected collaborations :

Background required from the applicant :

The applicant must have a serious background in organic chemistry and a good knowledge of classical techniques of purification and isolation of organic compounds and their rigorous structural characterization. A good motivation to learn, strong communication skills, curiosity, and team spirit will be surely appreciated.

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

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