



PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

Open PhD position at FUB for CSC scholarship candidates 2016

Please note: the PhD position is only offered to Chinese PhD candidates for application in the framework of the FUB-CSC PhD Program.

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| <u>Department/Institute:</u> | Chemistry and Biochemistry |
| <u>Subject area:</u> | Organic Chemistry: Natural Product Synthesis |
| <u>Name of Supervisor:</u> | Prof. Dr. Philipp HERETSCH (Mr.) |
| <u>Number of open PhD positions:</u> | 1 |
| <u>Type of the PhD Study:</u> | full-time |
| <u>Project title:</u> | Development of novel C–H-functionalization reactions and their application in the synthesis of biologically relevant natural products |

PhD Project description:

The objective of this project is the development of preparatively useful and predictably selective novel C–H-functionalization methods and their application in the synthesis of a complex natural product for biological evaluation.

A special focus will lie on the element copper, an inexpensive, abundant, non-toxic metal with extremely rich chemistry. Copper can readily access Cu⁰, Cu^I, Cu^{II} and high-valent Cu^{III} oxidation states allowing it to act through one-electron or two electron processes. Especially the ability to generate high-valent copper using dioxygen increases its chemistry exponentially since oxygen can act as either a sink for electrons (“oxidase activity”), or a source of oxygen atoms that are incorporated into the product (“oxygenase activity”), or even both.

The development of more robust and general methods for C–H bond oxidation through catalysis by high-valent copper and the design of new ancillary ligands that stabilize high-valent copper to facilitate novel C–H-functionalization reactions are the major thrust of this project. The application of newly developed C–H-functionalization methodology will culminate in the synthesis of a complex secosteroid natural product (e.g. aplysiasecosterol A) and its designed analogs.

In summary, state-of-the-art organic chemistry, with a special emphasis on C–H-functionalization chemistry will be developed and used to synthesize a challenging natural product. Its application for biological and/or drug discovery studies with collaboration partners in Berlin will round up this project.

Language requirements:

English: IELTS 6,5 or TOEFL 95 ibt.

Academic requirements:

Candidates with a strong background in synthetic organic chemistry (e.g. documented in a B.Sc. thesis in a similar field) are highly encouraged to apply.
Language skills in German are not a requirement.

Information of the professor or research group leader:

In our laboratory we are pursuing the synthesis and study of complex molecular structures relevant for biology and medicine. We work on the discovery and development of new synthetic strategies and technologies, especially in the field of C–H-functionalization, to employ them in our endeavors.

Please find further relevant information on our website: www.chemie.fu-berlin.de/heretsch

Please note:

In a first step the complete application should submit to the Beijing Office for evaluation by January 4th, 2016. Please don't contact the professor before. He/She will get in contact with you after having received the complete application in January.