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

Open PhD Position at Freie Universität Berlin, offered only to Chinese CSC scholarship candidates 2020

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

Department/Institute: Institute of Chemistry and Biochemistry
Subject area: Materials Synthesis and Organic Chemistry
Name of Supervisor: Prof. Dr. Siegfried Eigler
Number of open PhD positions: 1
Type of the PhD Study: Full Time
Project title: Synthesis of redox-active \( \pi \)-systems for hybridization with 2D materials

PhD Project description:

Graphene technology is just emerging and not yet taking the advantages of molecular structures included into hybrid materials into accounts. However, the combination of the advantages of molecular properties and the outstanding properties of 2D materials leads to a new field of research. This type of research is just emerging.

In this project, novel organic fluorescent redox-systems should be synthesized, which are environmentally friendly and stable under ambient conditions. Recently, we discovered diaminodicyanoquinone derivatives, which are highly fluorescent and redox active (Eigler group: Angew. Chem. Int. Ed. 2019, 58, 8235-8239). Here, the emission properties of diaminodicyanoquinone derivatives should become switchable by adding other chinone-based residues to the diaminodicyanoquinone core. The hybridization of those redox-molecules with 2D materials, e.g. by selective defect functionalization of graphene (Eigler group: Angew. Chem. Int. Ed. 2019, 58, 3599-3603) or semiconducting 2D materials will subsequently allow the integration of the switchable fluorescent materials into electronic devices and enable sensing applications, or light-harvesting applications.

Language requirements:
IELTS: 6.5 oder TOEFL: 95 ibt

Academic requirements:
Master (M. Sc.) in chemistry with focus on organic chemistry
Information of the professor or research group leader (website, awards etc.):

Workgroup: Eigler – Prof. Dr. Siegfried Eigler

Our work group is combining the fields of organic synthesis of π-systems to generate novel materials for solar cell and sensing applications. Moreover, we focus on the functionalization of graphene and 2D material. Finally, we fabricate electronic devices using the above mentioned novel materials to advance the field of sensing applications, such as environmentally important molecules including biomolecules.

Further information can be found on our website: www.eiglerlab.de

Please Note: In a first step, the complete application should be submitted to csc@international.fu-berlin.de for evaluation by January 4th, 2020. Please do not contact the professor before. He/she will get in contact with you after having received the complete application via the Beijing Office in January.