



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

Open PhD position at FUB for CSC scholarship candidates 2018

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

<u>Department/Institute:</u>	Department of Biology, Chemistry, Pharmacy / Institute of Chemistry and Biochemistry
<u>Subject area:</u>	Physical Chemistry
<u>Name of Supervisor:</u>	Prof. Dr. Thomas Risse
<u>Number of open PhD positions:</u>	1
<u>Type of the PhD Study:</u>	Full-time
<u>Project title:</u>	Understanding heterogeneously catalyzed selective hydrogenation using model catalysts

PhD Project description:

Heterogeneous catalysis is of utmost importance for today's chemical industry. However, an atomistic understanding of such processes is challenging, as it requires detailed knowledge on the structural and electronic properties of the catalysts under reaction conditions. At present, this is very difficult to achieve for complex high performance catalysts. A possibility is to use model catalysts, which allows to grasp the essential aspects of the catalytic system. To this end single crystalline oxide surface serving as the support for metal nanoparticles were shown to be suitable model systems to address these questions.[1] A detailed understanding on the mechanistic as well as kinetic properties of a catalytic transformation can be gathered by combining molecular beam techniques and surface sensitive spectroscopy to unravel both the nature of the surface species as well as the microkinetics of the catalytic process.[2] Within this project the role of a second metal for the selectivity of hydrogenation reactions should be investigated using bimetallic Pd-based nanoparticles deposited on single crystalline oxide surfaces.

[1] H. J. Freund, N. Nilius, T. Risse, S. Schauer mann, A fresh look at an old nano-technology: catalysis, Phys. Chem. Chem. Phys. 2014, 16, 8148.

[2] J. Libuda, H. J. Freund, Molecular beam experiments on model catalysts, Surf. Sci. Rep. 2005, 57, 157.

Language requirements:

IELTS 6.5 or TOEFL 95 ibt.

Academic requirements:

A master degree in Chemistry, Physics or related fields. The applicant should have a solid background in the properties of solid surfaces and modern spectroscopy. Hands on experience with ultrahigh vacuum technology is a plus.

Information of the professor or research group leader:

Prof. Dr. Thomas Risse
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Takustr. 3
14195 Berlin
Germany
Web-Page:

<http://www.bcp.fu-berlin.de/en/chemie/chemie/forschung/PhysTheoChem/agrisse/index.html>

Please note: In a first step, the complete application must be submitted to the Beijing Office for evaluation by January 4th, 2018. 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.