



## 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 2024**

**Department/Institute:** Department of Physics/Institute of Experimental Physics

**Subject area:** Solid-State Physics/Surface Physics

**Name of Supervisor:** Prof. Wolfgang Kuch

**Number of open PhD positions:** 1

**Type of the PhD Study:** Full-time

**Project title:** Molecular spin-switching at surfaces

### **PhD Project description:**

Organic molecules attached to solid surfaces have a great potential for the continuing miniaturization of all kind of electronic devices. Particular interest focuses on molecules that can reversibly change their properties upon an external trigger. Spin-crossover molecules are a class of molecules that possesses this feature. They can be switched between a diamagnetic low-spin and a paramagnetic high-spin state by temperature, light, or pressure. Attaching them to solid surfaces holds promise of application in molecular electronics.

The project is a continuation of our previous successful work in this field. The aim is to study the adsorption, the spin-switching properties and the intermolecular interactions leading to cooperative effects of assemblies of novel spin-crossover molecules on solid surfaces.

The molecules are synthesized by collaborating chemistry groups. The samples are prepared in vacuum by various deposition techniques and studied with respect to their spin-switching properties by x-ray absorption spectroscopy at the Berlin synchrotron radiation source BESSY II, where the university runs a superconducting magnet set-up that allows measurements at high magnetic fields and lowest temperatures.

The project is embedded in a rapidly progressing field of actual research that receives currently great attention due to its relevance for the further miniaturization of nanoscale devices.

### **Language requirements:**

- IELTS: 6,5 oder TOEFL: 95 ibt

**Academic requirements:**

Master of Science in Physics or related.

**Information of the professor or research group leader (website, awards etc.):**

<https://www.physik.fu-berlin.de/en/einrichtungen/ag/ag-kuch>  
[http://users.physik.fu-berlin.de/~kuch/pub\\_index.html](http://users.physik.fu-berlin.de/~kuch/pub_index.html)

**Please Note:** In a first step, the complete application should be uploaded to the [online portal](https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbd5/eng) (<https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbd5/eng>) for evaluation by January 15th, 2024. Please do not contact the professor before. He/she will get in contact with you after having received the complete application via the International Office of Freie Universität Berlin in January.