

## Helmholtz - OCPC - Programme 2017-2021 for the Involvement of Postdocs in Bilateral Collaboration Projects with China

### PART A

**Title of the project:**

**Fabrication and Characterization of Defect-Engineered Metal-Organic Frameworks**

**Helmholtz Centre and institute:**

**Karlsruhe Institute of Technology (KIT) - Institute of Functional Interfaces (IFG)**

**Project leader:**

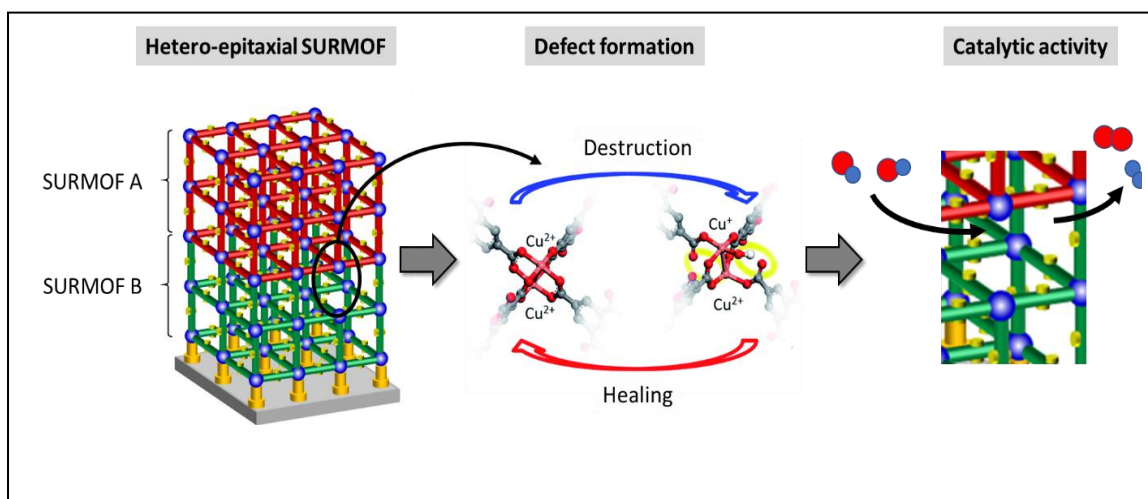
**Prof. Dr. Christof Wöll**

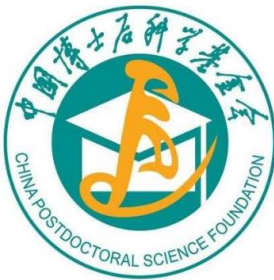
**Web-address:**

**[www.ifg.kit.edu](http://www.ifg.kit.edu)**

**Description of the project (max. 1 page):**

At IFG there are several projects in the area of defect-engineered metal-organic frameworks, MOFs, for applications in catalysis, optics, and electronics. For many of these research topics defects play a crucial role. In the context of this project, different types of surface-anchored metal-organic frameworks, SURMOFs, will be prepared including systems with hierarchical structures (hetero-multilayers). Different fully automated preparation techniques for a well-defined layer-by-layer deposition will be applied and developed for this kind of SURMOF production. In a post-synthetic reaction, different strategies for the introduction of defects within the different SURMOF layers will be used followed by their qualitative and quantitative analysis with different techniques including IRRAS, XPS, XRD and ToF-SIMS. Particularly the effect of the interfaces of





different SURMOF layers will be investigated with respect to reproducible formation of defects. Beside the preparation and characterization of defects, their effect on catalytic activity will be investigated.

**Description of existing or sought Chinese collaboration partner institute (max. half page):**

**Required qualification of the post-doc:**

The candidates need to have experience in MOF synthesis and characterization, including SURMOFs. Special emphasis will be on catalytic properties where open metal sites in metal-organic frameworks will be used to catalyze appropriate reactions. Beside the experimental preparation and characterization also theoretical investigations will be carried out. All mentioned aspects will require strong interdisciplinary cooperation.

**PART B**

**Documents to be provided by the post-doc, necessary for an application to OCPC via a postdoc-station in China, which is affiliated to a research institution like a university:**

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae, copies of degrees
- List of publications
- 2 letters of recommendation
- Proof of command of English language

**PART C**

**Additional requirements to be fulfilled by the post-doc:**

- Max. age of 35 years
- PhD degree not older than 5 years
- Very good command of the English language
- Strong ability to work independently and in a team