

Type of Position: PostDoc (TV-L13, 100%), Ulm University, Germany

Research Area: Analytical Chemistry

Principle Investigator (PI): Prof. Dr. Christine Kranz

Name of Institute: Institute of Analytical and Bioanalytical Chemistry
Ulm University

TRR234-C4: Characterization of 2D Catalyst-Interfaces – Correlation of Nanoscale Electrochemical and Structural Properties under *in situ/operando* Conditions
(Deckert/Kranz)

The project focuses on spatially and temporally resolved information on the light-driven reactivity of hydrogen evolution reaction (HER) and water oxidation catalysis (WOC) at molecule-in-matrix systems *via* scanning electrochemical probe microscopy and tip-enhanced Raman spectroscopy to obtain spatially and temporally resolved information on the light-driven reactivity. A key aspect of this project is targeted towards the effects of local inhomogeneities of matrices but also heterogeneity with respect to photosensitizer (PS) and catalyst (CAT) distribution.

Short description of the Job: In close collaboration with synthetic inorganic, organic and physical chemists, *in-situ / operando* studies will be performed at photocatalytically active molecule-in-matrix systems to map local variation of reaction products such as hydrogen and/or oxygen using micro- and nanoelectrodes. In addition, further development of miniaturized sensors will be performed to improve the achievable resolution and sensitivity in measurements. Experiments include also scanning electrochemical cell microscopy and force microscopy studies to perform screening experiments for optimization of heterogenized PS/CAT systems.

The successful applicant will have strong interest and background in electrochemistry, electroanalytical chemistry and scanning probe microscopy (ideally in scanning electrochemical microscopy and atomic force microscopy). The applicant should have excellent communication skill and be highly motivated to work in an interdisciplinary and international team. The applicant should also have excellent written and oral communications skills in English.