HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

Helmholtz Call for Chinese Applicants Interested in Running for CSC 2021 Fellowship

Helmholtz Centre: Forschungszentrum Jülich GmbH – www.fz-juelich.de

Department/Institute: Institute of Biological Information Processing - Bioelectronics (IBI-3) https://www.fz-juelich.de/ibi/ibi-3/EN/Home/_node.html

Supervising scientist: Dr. Yulia Mourzina and Prof. Dr. A. Offenhäusser

University for registration or for a future degree: RWTH Aachen University

Research Field: Key Technologies – Sensorics and bioinspired systems

Position open for: **PhD Student X** **Sandwich PhD Student** □

Title of the research: Bio-integrated electrochemical sensor systems based on biomimetic reactivity of metal complexes and nanozymes.

More description of research topic:

The Institute of Biological Information Processing - 3 (Bioelectronics) performs research on functional coupling of biomolecules and biomimetic compounds with micro- and nanoelectronic signal transducers for the development of sensors and bioelectronic devices. The proposed research is devoted to the advancement of electrochemical multisensor systems and wearable electrochemical sensor systems for the detection of reactive oxygen species with low detection limits, high selectivity, and spatio-temporal resolution. The efficiency of the sensor systems is achieved due to the catalytic reactions on the electrodes modified with biomolecules, biomimetic compounds, and nanozymes as well as signal amplification methods.
The proposed research covers investigation of sensing materials for the detection of reactive oxygen species, transducer materials for bio-integrated wearable sensors, and their interfacing. Metal complexes and their composites with metal- and carbon-based nanomaterials will be investigated as sensor materials in the electrocatalytic reactions with reactive oxygen species to elucidate possible intermediates, selectivity, and mechanisms. Novel mediatoreless sensors and multisensor systems will be evaluated in the studies of reactive oxygen species in normal and pathological conditions in the cell lines and in wearable electrochemical sensor systems.
At the Institute of Biological Information Processing (Bioelectronics), experience in electrochemical methods, nanotechnology, and cell culture is available.

Specific requirements:

Master studies of Chemistry or equivalent. Good knowledge of English language.
The successful thesis will be defended at RWTH Aachen University.

Working Place: Forschungszentrum Jülich, Germany (near Cologne)

Earliest Start: September 2021

Language Requirement: Very good knowledge of English language, written and spoken. German language courses are organised in the context of our in-house training program and are free of charge.

Name and Address of the Supervisor: Dr. Yulia Mourzina, Institute of Biological Information Processing (IBI-3), Research Centre Jülich, 52425 Jülich, Germany.
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