WWU MÜNSTER

Student Assistant Jobs
Master Theses
Dissertation Projects
Post-Doc Positions

Dynamics of Resistively Switching Materials and their Application in Novel Electronics

After decades of perfecting the established way of computing, it is now evident that the fundamental logic of today's computers will prevent them from ever reaching the efficiency of neural networks as found in nature. Thus a growing number of researchers try to follow nature's example when designing artificial electronics for information processing.

In NEURAMORPH, a project funded by the **European Research Council**, we aim at the development of simple and compact circuit elements to modify the strength of synaptic connections between artificial neurons. Amorphous semiconductors are employed for their inherent dynamics of electrical excitability – a completely new approach. For full control over the properties of these synaptic elements, a fundamental understanding of the relaxation processes in such amorphous materials is imperative. To this end, in this project we perform physical experiments and computer simulations to elucidate the relationship between elemental composition, structural dynamics and changing electrical excitability.

Besides the ERC-project our team is engaged in the **collaborative research centre Nanoswitches**. Together with our partners at RWTH Aachen University and at Forschungszentrum Julich we are working on answering fundamental scientific questions on the functional principles of resistively switching materials. The characteristic combination of physical properties in these materials allows their application in non-volatile memories.

Such an application in information technology also motivates our **collaboration with IBM Research**. Funded by the Industry-Academia-Partnership-and-Pathways program of the European Commission we cultivated an intensive knowledge exchange including secondments of PhD students to IBM in Zurich.

Furthermore, we are always developing new ideas for interesting research projects, which we finance from our group's research budget. Currently, for example, we are looking for persons with experience in **ultra-high-vacuum systems** in general and molecular-beam-epitaxy in particular. Likewise, we are expanding the range of experimental techniques using our **femto-second laser** system.

Would you like to join our team in researching the dynamics of resistively switching materials and potential applications in novel electronics? Then send **your application** for a position as a post-doctoral researcher or as a student research assistant, also for a project for a PhD thesis or a Master thesis to martin.salinga@uni-muenster.de. Besides a curriculum vitae and certificates documenting your academic grades and existing work experience respectively, your application should include a motivational letter describing your strengths and interests – ideally substantiated with concrete experiences.

https://www.uni-muenster.de/Physik.MP/Salinga/