

Scientist position in the design of circuit blocks for neuromorphic accelerators based on ferroelectric devices (predoctoral)

Devices based on ferroelectric hafnia promise low-energy solutions in beyond-von Neumann computing architectures such as neuromorphic accelerators. These require novel circuitry adapted to the specific benefits and challenges of ferroelectric devices (e.g. low readout currents, multilevel device operation, variabilities stemming from the device integration). In this project you will design and characterise bitcells for ferroelectric devices, and read-out circuitry to deal with small current densities in a multilevel device. You will work closely with materials engineers to match device behaviour to appropriate bitcell design and vice versa. Ideally you will also contribute to the development of ferroelectric device models. The results of the scientific work can be used to obtain a PhD in Electrical Engineering at the TU Dresden.

Responsibilities:

- Design of ferroelectric device-based circuit blocks for neuromorphic accelerators
- Design of sensing circuitry for ferroelectric devices
- Characterisation of integrated ferroelectric devices using an automatic probe station
- Application & development of ferroelectric device models
- Participation in EU projects with international collaborators

Your profile:

- Masters in Electrical Engineering, Computer Science, Physics or similar
- Experience in planning and executing scientific work
- Self-organised and driven approach
- Basic understanding of semiconductor device physics
- Fluent in German or English
- Good communication skills

The following skills are a plus:

- Experience working with Cadence or similar
- Experience working with TCAD models

Period:

- Begin of employment: 1st January
- Duration: target 36 month (depending on the time to obtain a PhD)
- Full time position

We offer:

- A young, welcoming, international workplace
- A strong team consisting of PhD students, Postdocs from different fields and technical staff
- Focused guidance during your PhD studies
- Experience collaborating internally and internationally, with academia and industry
- Experience working with high-end characterization and simulation tools

About Us

NaMLab gGmbH is a research organization and associated institute of the Technical University Dresden. NaMLab provides industry-oriented and basic research in material science for electronic devices. Based on its key expertise in dielectric materials for semiconductor devices, NaMLab focuses on the integration and application of materials applied to reconfigurable, energy efficient devices. NaMLab's approach of placing the device rather than the material system itself into the center of its research activities differentiates it from other world-class material research activities in the Dresden area. Additionally, it allows strong collaboration between different research groups and international partners. It thereby fills the gap between basic materials research and its application towards electronic circuits and systems.

Check also our video about working on capacitors at Namlab:

<https://www.youtube.com/watch?v=e8pqf5RTqw>

For further information please contact:

NaMLab gGmbH
Dr. Stefan Slesazeck
Noethnitzer Str. 64 a
01187 Dresden, Germany
T +49.351.2124990-44
F +49.351.2124990-99

Please send your application to: jobs@namlab.com