

## **PhD position at NaMLab**

### **Ferroelectric Device Development, Characterization and Integration**

NaMLab is looking for a PhD candidate in the field of device development of ferroelectric Back-End-Of-the-Line (BEOL) devices, such as ferroelectric capacitors, ferroelectric tunnel junctions, and ferroelectric field-effect transistors. The work focuses on hafnium-oxide based ferroelectric devices that are to be manufactured at NaMLab and to be co-integrated into the BEOL of CMOS test chips. The circuits will be designed together with other project partners and will be manufactured at a foundry. The final objective is the adoption of multi-level cells (MLC) for the development of memristive-based artificial neurons and synapses for in-memory computing. Main tasks will be the research and optimization of ferroelectric devices. Moreover, the electrical characterization and modeling of the electrical behavior are integral part of the research, targeting at the optimization of electrical characteristics such as on/off ratio, on-current density, data retention and cycling endurance. The technology development should be performed in close collaboration with the development of the circuit concepts that adopt these novel devices (design technology co-development).

#### **Responsibilities:**

- Development of ferroelectric devices
- Electrical characterization of the fabricated devices
- Modeling of switching as well as conduction mechanisms
- Communication with project partners and reporting
- Basic circuit design of interfacing circuits to the ferroelectric devices

#### **Your profile:**

- M.Sc. / M.Eng. in electrical engineering / physics / material science
- Well-grounded knowledge on semiconductor manufacturing and device physics
- Basic knowledge in analog circuit design
- Good technical comprehension
- Ability to work in a team environment
- Proficiency in written and spoken English

#### **The following skills are a plus:**

- Expertise in electrical characterization
- Experience in working in a clean room environment
- Expertise in circuit design using Cadence

#### **Period:**

- Planned starting date: January 2023
- Duration: 3 years

#### **We offer:**

The salary will be based on German research organization standards.

For further information please contact:

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