

TUD Dresden University of Technology, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

At the **Faculty of Electrical and Computer Engineering, Institute of Semiconductors and Microsystems (IHM)**, the **Chair of Nanoelectronics** offers a position as

Research Associate / PhD student (m/f/x)

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting **as soon as possible**. The position is limited to 36 months. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz-WissZeitVG). The position offers the chance to obtain further academic qualification (usually PhD).

Tasks: As part of a DFG project, the *Neurotransistor-based Memristive Crossbar Memcomputing (NeuroMCross)* is to be scientifically investigated. Hybrid memristor crossbar structures on the gate electrode of a silicon-based field-effect transistor are to be fabricated, electrically characterized and modelled. The existing clean room at the chair and the connected research rooms and laboratories will be used for the production and structuring of individual resistive switching elements, integrated transistor-based switching elements with functionalized gate electrode(s) and for the fabrication of matrix structures. A variety of semiconductor technology systems and processes are used, also with partners (especially in the clean room/research laboratory of NaMLab gGmbH), e.g. UV contact lithography, thermal oxidation/diffusion or ALD/CVD/PVD. Electrical characterization is carried out using DC and transient measurement methods in order to check the switching properties of the transistors and matrix structures as well as the memory behavior of the memristive components. The modeling of the memristive and memcapacitive properties is part of the project and will be supported. Close scientific cooperation with other research groups (NaMLab gGmbH, Chair of Fundamentals of Electrical Engineering at TUD), regular project meetings, participation in conferences and publication in scientific journals will be part of the project.

Requirements: above-average university degree in the field of electrical engineering, physics, materials science or a related field. Furthermore, a very good command of English, excellent teamwork skills and an independent and self-reliant way of working are expected. Experience in working in a clean room environment and in the practical implementation of thin film processes and/or analyses on semiconductor materials and semiconductor devices is desirable. Knowledge of electrical characterization methods is preferred.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be

equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please submit your detailed application with the usual documents by **May 22, 2024** (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies), preferably via the TUD SecureMail Portal <https://securemail.tu-dresden.de> by sending it as a single pdf file to nanoelektronik@tu-dresden.de or to: **TU Dresden, Fakultät Elektrotechnik und Informationstechnik, Institut für Halbleiter- und Mikrosystemtechnik (IHM), Professur für Nanoelektronik, Herrn Prof. Dr.-Ing. Thomas Mikolajick, Helmholtzstr. 10, 01069 Dresden, Germany.** Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: <https://tu-dresden.de/karriere/datenschutzhinweis>.