Technische Universität Braunschweig - Institute for Semiconductor Technology

With around 16,000 students and 3,800 employees, the Technische Universität Braunschweig is one of Germany´s leading institutes of technology. It stands for strategic and performance-oriented thinking and acting, relevant research, committed teaching, and the successful transfer of knowledge and technologies to the economy and society. We consistently advocate for family friendliness and equal opportunities. Our research focuses are mobility, engineering for health, metrology, and city of the future. Strong engineering and natural sciences are our core disciplines. These are closely interconnected with economics, social and educational sciences and humanities. Our campus is located in the midst of one of the most research-intensive regions in Europe. We work successfully together with over 20 research institutions in our neighborhood as we do with our international partner universities. Starting from the earliest possible date the Institute for Semiconductor Technology is looking for a

Research Associate (m/f/d)
in the field of
"Mechanical Spectroscopy for High-Precision Experiments"

(EG 13 TV-L, full-time/part-time) We invite applications for a PhD or researcher position in the group of Prof. S. Kroker at the TU Braunschweig. The position is offered for an initial period of three years and provides the opportunity to pursue a doctoral degree. You will contribute to pushing the boundaries of the measurable, by investigating mechanical dissipation mechanisms for ultra-low thermal noise in high-precision optical experiments. This research is amongst others, supported by the ERC within the Consolidator Grant „MightyMirrors“. The specific project focuses on mechanical dissipation in materials relevant to ultra-stable laser cavities, MEMS, and gravitational wave detectors. The work involves studying light-induced losses in GaAs, as well as the mechanical properties of mono- and polycrystalline diamond, bonded interfaces, and optical coating materials such as a-Si and SiN. A key objective is the development of a novel setup for off-resonant, low-frequency loss measurements to characterize materials directly at application-relevant frequencies at room temperature and cryogenic temperatures. We are seeking a motivated and inventive researcher eager to contribute to this dynamic field and help shape the future of precision sensing. We expect you to bring in your talent, enthusiasm, and ingenuity to the team, and undertake appropriate responsibilities. The group is based in the Institute of Semiconductor Technology (IHT), specialized in nitride processing with dedicated own clean-rooms (Nitride Technology Center and Epitaxy Competence Center). We are part the Laboratory for Emerging Nanometrology (LENA) research center, which offers state-of-the-art facilities in micro-nano characterization; and also members of the Cluster of Excellence QuantumFrontiers and the Quantum Valley Lower Saxony (QVLS).

City: Braunschweig; Starting date (earliest): At the earliest possible; Duration: 3 years; Remuneration: EG 13 TV-L; Closing date: 19/12/25

Working field

- Conduct research on mechanical dissipation in materials relevant to ultra-stable laser cavities, MEMS, and gravitational wave detectors.
- Investigate light-induced losses in GaAs, as well as mechanical properties of mono- and polycrystalline diamond, bonded interfaces, and optical coating materials such as a-Si and SiN.
- Contribute to the development and optimization of a novel experimental setup for off-resonant, low-frequency loss measurements, enabling direct characterization of materials at application-relevant frequencies.
- Take an active role in the definition, design, and assembly of experimental setups, including precision measurement systems and micromechanical test structures.
- Collaborate closely with in-house experts in microelectronic design, clean-room processing (nitrides, silicon, hybrid integration), micro- and nano-metrology, and quantum technologies.
- Engage with international research centers in sensing, metrology, and quantum technology, and participate in collaborative projects with external partners.
- Integrate into the interdisciplinary research team of Prof. Stefanie Kroker and the Institute of Nanoscience and Technology (IHT).
- Contribute to the publication of research results in leading journals and presentations at international conferences.

Requirements

- Master’s degree (or equivalent) in physics, materials science, electrical engineering, mechanical engineering or a related field.
- Strong background or interest in experimental physics, mechanical or optical metrology, and materials characterization.
- Experience with (or willingness to learn) optical and mechanical measurement techniques, vacuum systems, or micro/nanofabrication.
- Motivation to work on precision experiments involving advanced materials such as GaAs, diamond, and amorphous coatings.
- Ability to analyze and interpret experimental data and to document and communicate results effectively.
- Interest in interdisciplinary collaboration with experts in materials science, optics, and quantum technologies.
- Good command of English, both spoken and written; knowledge of German or Spanish is an asset but not required.
- Curiosity, initiative, and enthusiasm for contributing to the development of Ubiquitous Metrology and precision sensing technologies.

What we offer

- Pay in accordance with the collective agreement TV-L, pay grade up to E13 with 75%, depending on the assignment of tasks and fulfilment of personal requirements.
- A special payment at the end of the year as well as a supplementary benefit in the form of a company pension, comparable to a company pension in the private sector.
- Interesting and diverse tasks in a pleasant working atmosphere with a friendly and motivated team.
- A workplace that is basically suitable for part-time work, although the position is to be filled full-time, as well as flexible working and part-time options and a family-friendly university culture, awarded the “Family-friendly university” audit since 2007.
- A wide range of continuing education and company health care programmes as well as a vibrant campus life in an international atmosphere.
- Financial support to carry out research stays abroad.
- Special continuing education programs for young scientists, a postdoc program, as well as other offerings from the Central Personnel Development Department and sports activities.

Application

We welcome applicants of all nationalities. At the same time, we encourage people with severe disabilities to apply. Applications from severely disabled persons will be given preference if they are equally qualified. Please attach a proof of disability to your application. We are also working on the fulfilment of the Central Equality Plan based on the Lower Saxony Equal Rights Act (Niedersächsisches Gleichberechtigungsgesetz—NGG) and strive to reduce under-representation in all areas and positions as defined by the NGG. Therefore, applications from women are particularly welcome in this case.

The personal data will be stored for the purpose of processing the application. By submitting your application, you agree that your data may be stored and processed electronically for application purposes in compliance with the provisions of data protection law. Further information on data protection can be found in our data protection regulations at https://www.tu-braunschweig.de/datenschutzerklaerung-bewerbungen . Application costs cannot be reimbursed.

Questions and Answers
For more information, please call Judith Krakowski on +49 (0) 531 391-65323.

Deadline for applications is December 19, 2025

Are you interested? Please send your application preferably via email to
j.krakowski@tu-braunschweig.de

- r via mail to

Technische Universität Braunschweig
Institut für Halbleitertechnik
Prof. Kroker
Hans-Sommer-Str. 66
38106 Braunschweig

More information at https://stellenticket.de/199748/HTWB/
Offer visible until 19/12/25