IHP GmbH -
Leibniz Institute for High Performance Microelectronics/
Leibniz-Institut für innovative Mikroelektronik

PhD Position/PostDoc Position (m/f/d) for the design, growth and investigation of THz emitting/detecting devices in SiGe

Job-ID: 0012/26 | Department: Material Research | Salary: as per tariff (TV-L) | Working Time: 20h/week | Limitation: initially two years with option of extension | Starting Date: as soon as possible

IHP is an institute of the Leibniz Association and conducts research and development of silicon-based systems and ultra high-frequency circuits and technologies including new materials. It develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, industry 4.0, automotive industry, and aerospace. IHP employs approximately 400 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25 µm-SiGe-BiCMOS technologies, located in a 1500 m² cleanroom that meets the highest industrial nanotechnology requirements.

The position:

As a PhD student and a member of the “Semiconductor Quantum Materials” research group within the "Materials Research" department, you will contribute to the field of integration of group IV semiconductor advanced devices into state-of-the-art CMOS technology. Your responsibilities will include conducting experimental analyses of innovative materials and devices based on complex SiGe heterostructures. You will use a toolbox of structural characterization techniques and cryogenic magnetotransport. You will join an international team of scientists, including highly experienced researchers and several PhD students, who are looking forward to welcoming you and working with you. We value diversity of perspective highly and are pleased to have a gender-balanced team.

Your project:

The project's ambition is to to develop innovative optoelectronic devices operating in the THz spectral region, a region of the electromagnetic spectrum of great interest for various applications such as medical diagnostics and next-generation telecommunications. The activity will focus mainly on the design, implementation, and characterization of vertical transport quantum superstructures based on SiGe heterostructures, specifically aimed at the creation of devices such as resonant tunneling diodes (RTDs) and interband transition detectors in the conduction band (Quantum Cascade Detectors, QCDs). A strong interaction with the project leader, the laboratory leaders and the partners of the project consortium is foreseen.

Your qualifications:
You hold a Master's degree in condensed matter physics, semiconductor devices or a related field. You have previous experience in simulation tools for quantum devices (e.g. NextNano), CVD-based epitaxy, micro-Raman, x-ray diffraction, scanning probe microscopy. You are also experienced in data analysis using Python and Origin. You have a background in semiconductor materials characterization (including e.g. electron microscopy and transport measurements).
We need you to be a strong team player, able to effectively plan and execute your own work, and to work in an organized manner with other creative minds. You will be ideally suited for this position if you have experimental, analytical and problem-solving skills, very strong communication skills, the ability to quickly learn how to use the latest technical equipment including various software, and most importantly, if you are an independent thinker.
As IHP is an international research center, it is necessary that you are fluent in English. German language skills are welcome. The improvement of German language skills is expected and strongly encouraged, e.g. through in-house language courses and intensive courses.

Our Offer:
Conduct research in a challenging, multinational environment giving you excellent career opportunities. You will have the chance to establish international reputation at the edge of top-notch technologies.
It is important to us to support the individual career developments (e.g. conferences, advanced trainings) as well as the personal needs of our employees by offering flexible working hours and the possibility to work off-site. The compatibility of work and family is highly valued. More information about our scientific excellence and the working environment at IHP can be found on our website.
IHP is TOTAL E-QUALITY-certified for equal opportunities for women and men at work and actively pursues the equality of all gender and all groups of people. We promote the professional development of women and strongly encourage them to apply. Disabled applicants, qualified according to the above criteria, will be given preference over other candidates with equivalent relevant qualifications.

Further advantages:
30 days holiday | special annual payment | Company pension scheme (VBL) | Flexible working hours, also part-time (no core working hours) | Possibility to work up to 40 % independent of location according to company agreement | A wide range of further training opportunities in-house or within the framework of business trips | Discounted company ticket with monthly allowance of € 15 for various fare zones | Good transport connections, free parking at the institute | Structured induction and actively supported integration into the institute (welcome workshop, intercultural workshop, joint leisure activities)

Your application:
Have we sparked your interest? We look forward to receiving your application in German or English via our **online application form.**

For more information about the position, please contact Prof. Dr. Giovanni Capellini: career@ihp-microelectronics.com.