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

PhD position (m/f/d) for the investigation of structural, optical, and thermal properties of SiGeSn alloys and their heterostructures

Job-ID: 0052/24 | Department: Materials Research | Salary: as per tariff (TV-L) | Working Time: 40h/week with part-time option | Limitation: initially 2 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 380 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 member of the research group "Semiconductor Optoelectronics" within the department "Materials Research" you will contribute to the field of group IV semiconductor integration into state-of-the-art CMOS technology.
Your tasks will include the experimental analysis of elemental semiconductor alloys and heterostructures using optical spectroscopy and cryogenic systems. An international team of scientists, including very experienced scientists as well as several PhD students, is looking forward to welcoming you and working with you. We see a diversity of perspectives as a great asset to the research team, and we are happy to have a balanced gender mix in our group.

Your PhD project:

The project at IHP aims at the development of a new material system for on-chip thermoelectric conversion at temperatures in the range of 0-100 C. The project includes an extensive material characterization activity, which would allow to evaluate the potential of SiGeSn heterostructures as a multifunctional material for opto-thermo-electronic integration, as well as the fabrication of prototype devices for the demonstration of thermoelectric power generation. A strong interaction with the project leader, the laboratory leaders and the partners of the project consortium is foreseen.

Your qualifications:

You have a Master's degree in condensed matter physics, semiconductor devices, materials science, or a related field. You have experience in optical spectroscopy (including micro-Raman, micro-photoluminescence) and/or

scanning probe microscopy and data analysis (Python, Matlab, Origin). Ideally, you will have a background in semiconductor materials characterization (including e.g. X-ray diffraction/reflection, electron microscopy).
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 that offers excellent career opportunities. You will have the opportunity to build an international reputation at the forefront of cutting-edge technologies. The PhD will be supported by an experienced supervisor and accompanied by a supervision agreement. We give you the opportunity to complete your PhD in 3-4 years. After one and a half years, the duration of the contract will be adjusted by mutual agreement to the foreseeable duration of the doctorate. An orientation guide will help you to quickly integrate into the institute and familiarize yourself with the field.
It is important to us to support the individual career development (e.g. conferences, advanced training) 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 in the workplace and actively pursues equality for all genders and all groups of people. We support the professional development of women and encourage them to apply. Disabled candidates who meet 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 | Parent-child room as a possibility to work with a child in case of childcare bottlenecks | 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 | Canteen with breakfast and lunch | On-site health services | Company family and care guides | Free, confidential counselling by an external service provider in a wide variety of challenging private or professional situations, for example on how to reconcile work and family life or in psychosocial emergencies | Structured induction and actively supported integration into the institute (welcome workshop, intercultural workshop, joint leisure activities)

Your application:

Have we sparked your interest? Then we look forward to receiving your application via our **online application form.**

For further information regarding the position please contact Dr. Zöllner: career@ihp-microelectronics.com.