



PhD Position (m/f/d) for “Development of Silicon-compatible detectors for use in object identification”

Job-ID: 0107/23 | Department: Materials Research | Salary: as per tariff (TV-L) | Working Time: 40h/week (part-time work option) | Limitation: initially 2 years with option of extension for three more years | 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 PhD student of the research team “Adaptive Materials” within the “Materials Research” department at IHP you will contribute, following the More-Than-Moore approach, to the diversification of established Si technology by research and development of future Si/Ge- and III/V-on-Si-based metasurface photodetectors realized in an industrial production line for sensor technology in the area of object identification. This task will include working in the IHP cleanroom, focusing on learning and managing of pilot line operations such as Si substrate design and fabrication, process flow development and epitaxial crystal growth of Si/Ge and III/V materials. Furthermore, the structural analysis and evaluation of processed and grown structures using state-of-the-art metrology methods, such as scanning electron microscopy (SEM), atomic force microscopy (AFM) and Transmission electron microscopy (TEM), will also be a very important part of your PhD work. An international team of 12 scientists including very experienced scientists as well as several PhD students is looking forward to welcoming you. Flat hierarchies and mutual support are important to us. We see diversity of perspectives as a great advantage for our team.

Your project:

The PhD position and work will be in the framework of the recently started BMBF project “OASYS”, a major joint venture of Fraunhofer IMPS Dresden, Ferdinand Braun Institute Berlin, Brandenburg Technical University (BTU) Cottbus-Senftenberg and IHP. This project’s overall goal is the development of photoelectronic sensors for application-oriented systems for life sciences and intelligent manufacturing, contributing to the initiate structural change process in the Lausitz region. Your participation will be in subproject A3, where new Si/Ge- and III/V-on-Si-based detector concepts are being developed, focused on metasurfaces, which can be used based on their capabilities for resolving spectrum and polarization in conjunction with an extended detection range into the near infrared range and beyond. Working as member of the OASYS project requires a strong interaction with the project



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manager, pilot line/laboratory responsible and further colleagues of the Material Research and Technology department at IHP as well as with external colleagues and partners from Fraunhofer IMPS and BTU Cottbus-Senftenberg. More collaborations with several national and international collaborators are considered.

Your qualifications:

You hold a Master degree in Physics, Material Science, Chemistry or a comparable study area. You are familiar with semiconductor physics, crystal growth, material properties and photonics. You have first experience and a strong interest in process flow engineering, heteroepitaxy and metrology for structural investigation (e.g. SEM, AFM, TEM). We are looking for a team member, who is able to structure his or her own tasks and to bring a well-organized and systematic way of working into the cooperation with creative minds. In this position, you need to be a strong team player. You are an ideal match for this position, when you have experimental, analytical and problem-solving qualities, very strong communicative skills and the ability to quickly learn how to operate the latest technical equipment including various software. It is necessary that you confidently handle the English language. Knowledge of the German language is welcome. The conducting of German language skills is expected and highly encouraged, for example in in-house language courses and intensive courses.

Our Offer:

Do 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. An orientation guide will help you to quickly integrate into the institute and to familiarize yourself with the field.

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 | 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. O. Skibitzki: career@ihp-microelectronics.com.

