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

Research Associate/PhD Position (m/f/d) for Al-Al Wafer Bonding Technology Development for BiCMOS Wafer-level Packaging Applications

Job-ID: 7037/26 | Department: Technology | Salary: E13 TV-L | Working Time: 40h/week (part-time option possible) | Limitation: initially for 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 410 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 member of the research group "Heterogeneous Integration of Devices & Technologies" within the department Technology you will contribute to a wide range of research activities in the field of high frequency advanced packaging and heterogeneous integration of SiGe BiCMOS technologies for mm-wave up to THz applications. Your tasks will include the development of process technologies and modules using IHPs 200 mm BiCMOS pilot line and IHP advanced Al-Al wafer bonding process technologies. In addition, you will contribute to the design and FEM simulations, and the characterization of advanced wafer-level packaging and interconnection technologies. An international team of 9 scientists, PhD students and engineers is looking forward to you. Flat hierarchies and mutual support are important to us. We see diversity of perspectives as a great advantage for our team.

Your work is suitable both for a research associate or a PhD project. In case of a PhD project, your work is supported by an experienced supervisor and accompanied within the framework of a supervision agreement. We aim together for a completion within 3-5 years. After one and a half years, the topic will be finally defined and the contract duration will be adjusted accordingly by mutual agreement to the foreseeable doctoral period.

Your tasks:

- Process development of wafer-to-wafer and chip-to-wafer Al-Al bonding interconnection technologies based on IHPs BiCMOS wafer-level packaging technologies
- Process development and process integration within IHPs 200 mm BiCMOS pilot line
- Design and layout of process control monitor test structures for process development and characterization

- Electrical (e.g. DC, RF) and offline characterization (e.g. SEM, FIB) of developed process modules and components
- Support the development of reliability characterization of BiCMOS wafer-level packaging technologies
- Project support and dissemination of research results within high-level scientific journals and conferences

Your qualifications:

- Completed university degree (Master/Diploma) in Electrical Engineering, Material Science, or a related field
- Knowledge about semiconductor process technologies with focus on BEOL and wafer-level packaging technologies
- Theoretical and practical experience of wafer-to-wafer and chip-to-wafer thermo-compression and hybrid bonding
- Extensive hands-on experience with FEM simulation tools (e.g. ANSYS Workbench)
- Ability to work independently in a structured and solution-oriented manner
- Team player with strong communication skills and high self-motivation
- German and English language skills mandatory, both written and spoken

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.

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. Matthias Wietstruck: career@ihp-microelectronics.com.