Driving decarbonization and digitalization. Together.

Doctoral Thesis: "Investigation of the influence of organic and inorganic traces on the influence of semiconductor structures in a high-volume semiconductor production with a complex technology mix" (f/m/d)

Job description

The industrial doctorate at Infineon: Pursue a doctoral degree at a university and gain professional experience simultaneously - an ideal start for your career. Advance your research with us and profit from our vast network of doctoral candidates and the expertise of a university. Mentorship is handled by both professors and dedicated Infineon employees. We are offering a doctoral thesis at Infineon Dresden. There, Infineon establishes the first high volume manufacturing with a complex mix of CMOS and Power technologies in the 300 mm production. Many different materials are used for both technologies, the different products which will be produced within the production line in the same clean room, equipment and wafer containers. The main goal of the thesis is to work out strategies on how to produce different technologies in parallel, which measures are needed for a safe production and how to avoid any cross contamination between the different internal supply chains of the factory. The research work is to define and apply different analytical methods, innovative sensor systems and methods to prevent the products from any critical contamination within the manufacturing flow. A main goal is to get a deep understanding about the level of both organic and inorganic components as well as working out and testing different methods for safe and contamination free manufacturing. The thesis will be written in cooperation with TU-Dresden and under the supervision of Professor Stefan Kaskel

The tasks within the thesis will consist of:

- Defining and applying analytical methods for trace analysis of organic and inorganic components in the manufacturing flow of Power and CMOS technologies
- Determination of the level of inorganic and organic components in the different supply chains
- Working out strategies for FOUP monitoring (particles and elements in a mixed wafer fab)
- Research on baselines for the level of inorganic and organic traces in the process flow of power and CMOS technologies and define the specifications and warning limits
- Big data analysis for root cause finding of possible contamination
- Defining prevention strategies to reduce contamination to a minimum
- Investigations about new container cleaning strategies

At a glance

Location:	
Job ID:	**HRC0846952**
Start date:	**Aug 01, 2024**
Entry level:	**0-1 year**
Type:	**Full time**
Contract:	**Temporary**

Apply to this position online by following the URL and entering the Job ID in our job search. Alternatively, you can also scan the QR code with your smartphone:

Job ID: HRC0846952
www.infineon.com/jobs

Contact

Antonie Stredak

The learnings out of the thesis will be/lead to

- New clean room strategies for a future smart power factory with best yields
- New analytical methods and strategies in the semiconductor industry (presentations in workshops, conferences and journals) and other industries working in a cleanroom
- New cleaning methods and equipment engineering methods, e.g. new sensors and sensor architectures

Profile

A doctoral student is a research enthusiast,
› whose interests are scientific research combined with the passion for Infineon's innovative products and applications.
› who enjoys working in an industrial environment in combination with an Infineon partner university.
› who appreciates open communication and the contribution of an international environment.
› and is thus an excellent candidate for a further academic or industrial career after completion of their thesis.

As the ideal candidate you:

- Are **eligible for full-time PhD studies** and have a master's degree in Chemistry or a related field
- Are a highly motivated person
- Have good to very good grades
- Have good IT and software knowledge
- Behave very analytical and structured

Know-how in following topics is preferable - but not mandatory

- Strong background in analytical chemistry, organic and inorganic chemistry
- Know how on analytical chemistry, ultra-trace analysis
- Knowledge in methods, AAS, ICP.MS, Ion-Chromatography, gas-chromatography
- If possible: basic knowledge of semiconductor manufacturing
- Excellent English and German skills
- Know How in big data analytics, Python, Java,
- Experience in literature surveys, e.g. Zotero

Benefits

- **Dresden:** Coaching, mentoring networking possibilities; Wide range of training offers & planning of career development; International Assignments; Different Career Paths: Project Management, Technical Ladder, Management & Individual Contributor; Flexible working conditions in office jobs; Home Office possibilities; Part-time work possible (also during parental leave); Spots in local kindergarden; On-site social counselling and works doctor; Health promotion programs; Fitness Room; On-site canteen; Private insurance offers; Wage payment in case of sick leave; Corporate pension benefits; Flexible transition into retirement ; Performance bonus; Reduced price for public transport, car sharing, charging station for e-cars and e-bikes; Accessibility, access for wheelchairs; Possibility to work remotely from abroad (EU)

Why Us

Driving decarbonization and digitalization. Together.

Infineon designs, develops, manufactures, and markets a broad range of semiconductors and semiconductor-based solutions, focusing on key markets in the automotive, industrial, and consumer sectors. Its products range from standard components to special components for digital, analog, and mixed-signal applications to customer-specific solutions together with the appropriate software.

– At Infineon Dresden we produce power semiconductor devices –
Every week thousands of silicon wafers pass through our highly complex production system. We also take innovation one step further and think ahead in areas such as automation and production concepts, business process and maintenance.
In Dresden we value work-life balance, not only with our flexible working time but also with our parent friendly office.
Infineon Technologies Dresden GmbH & Co. KG is one of the largest production sites of Infineon Technologies AG with more than 3,200 employees. Every week thousands of silicon wafers pass through the highly complex production system in our high end clean room. The site in Dresden was one of the world's first high-volume production sites for power semiconductor devices on 300mm wafers.
For more information about our site in Dresden please check out the following link:
www.infineon.com/cms/dresden/en/

We are on a journey to create the best Infineon for everyone.
This means we embrace diversity and inclusion and welcome everyone for who they are. At Infineon, we offer a working environment characterized by trust, openness, respect and tolerance and are committed to give all applicants and employees equal opportunities. We base our recruiting decisions on the applicant´s experience and skills.
We look forward to receiving your resume, even if you do not entirely meet all the requirements of the job posting.
Please let your recruiter know if they need to pay special attention to something in order to enable your participation in the interview process.
Click here for more information about Diversity & Inclusion at Infineon.