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CALLING ALL EXPERTS IN POWER ELECTRONICS AND DEVICE PHYSICS!
AT FRAUNHOFER MAKE THE MOST OF YOUR TALENTS BY JOINING OUR
ADVANCED DEVICES TEAM. POSTS ARE IMMEDIATELY AVAILABLE FOR:

PhD position - development of vertical GaN power electronic devices

The Fraunhofer Society operates 76 institutes and research facilities in Germany and is the world's leading organization for application-oriented research. Around 30,000 employees work on an annual research volume of 2.9 billion euros. The Fraunhofer Institute for Silicon Technology ISIT is part of the Fraunhofer Society and works with approximately 170 employees at the locations Itzehoe and Kiel in a leading position with industry and research on a national and international level. Our scientists develop power electronic components and silicon-based microsystems. The Power Electronics business focuses on developing advanced active and passive power semiconductor components based on silicon and gallium nitride. We also integrate them into power electronic systems and develop battery storage and high-performance storage systems.

Our GaN-based power devices focus on MOSFET transistors with vertical current flow and High-Electron-Mobility Transistors (HEMTs) with lateral current flow. The goal of this position is to develop, process and characterize vertical trench-MOSFETs and diodes based on GaN-on-Si substrates. The devices will be evaluated in traction inverters and the investigation of their failure mechanisms will conclude the activity. The position is to be filled immediately.

What you will do

- Design and simulation of processing steps and device properties using TCAD
- Evaluation and adaptation of semiconductor processes
- Accompanying of wafers during manufacturing in our clean rooms
- Electrical characterization (static and dynamic)
- Modeling of failure mechanisms using compact models
- Communication of findings both internally and externally to customers
- Collaboration in national and international project teams
- Scientific profiling through publications as well as support in the acquisition of research projects and industrial projects

What you bring to the table

- A university degree (master's/diploma) in physics, electrical engineering, or a related field, with excellent academic performance
- In-depth knowledge of semiconductor manufacturing technologies and processes, preferably GaN-specific
- Experience in the characterization of semiconductor processes and devices
- Additional skills in device development and process/device simulation (TCAD) are advantageous
- Proficient in the English and German language, both orally and in writing
- A high degree of independence, initiative, and commitment
- You can familiarize yourself with new problems quickly and enjoy taking on responsibility in a team.

What you can expect

- We offer you an innovative working environment with versatile activities in the field of publicly funded and industry-related research and development.
- A varied range of topics with close contacts to industry and public clients awaits you.
- You have the space to work independently and with your own ideas, and you can actively help to shape the future.
- We offer flexible working hours and support the balance between private and professional life.

The weekly working time is 39 hours. The position is limited to 3 years. We value and promote the diversity of our employees' skills and therefore welcome all applications - regardless of age, gender, nationality, ethnic and social origin, religion, ideology, disability, sexual orientation and identity. Severely disabled persons are given preference in the event of equal suitability. Appointment, remuneration and social security benefits based on the public-sector collective wage agreement (TVöD).

With its focus on developing key technologies that are vital for the future and enabling the commercial utilization of this work by business and industry, Fraunhofer plays a central role in the innovation process. As a pioneer and catalyst for groundbreaking developments and scientific excellence, Fraunhofer helps shape society now and in the future.

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