TECHNISCHE UNIVERSITÄT WIEN

Post-doc Position
Defect characterization of compactified nano-porous 4H-SiC layers

TU Wien is located in the heart of Europe, in a cosmopolitan city of great cultural diversity. Our identity as a research university means that we build our reputation through our research. TU Wien combines basic and applied research and research-oriented teaching at the highest level.

The group of Prof. Ulrich Schmid at the Institute of Sensor and Actuator Systems invites applications for a 2-year Post-doc position (starting January, 2023) in the field of defect characterization of compactified nano-porous silicon carbide (4H-SiC).

The Project

Due to outstanding properties in comparison to silicon such as a large bandgap ensuring a high electric breakdown strength and a high thermal conductivity silicon carbide (SiC) is regarded as one of the most promising wide band gap semiconductors for future high power and high frequency electronic applications. Besides these well-known material parameters, advanced device architectures request novel approaches for fabrication. In recent years, photoelectrochemically porosified SiC emerged as promising technology to integrate optical elements (e.g. Rugate mirror) into single-crystalline SiC and to realize robust MEMS devices (e.g. membranes) in a tailored surface micromachining process. Furthermore, the surface to volume ratio could be increased for chemical sensor applications as well as the realization of membranes lifted-off from the SiC mother substrate was demonstrated.

Within the frame of an interdisciplinary research project, including 9 researchers and two company partners, **it is our goal to exploit the full potential of photoelectrochemically porosified SiC layers, by establishing a fundamental understanding in the formation of electrically active defects and their impact on the performance of power devices and MEMS.**

The post-doc will provide deep insights in the electrical, structural as well as chemical properties of photoelectrochemically porosified SiC layers before and after compactification. He or she will support the principal investigator of the project, Dr. Georg Pfusterschmied in the supervision of PhD students employed in the project and will assist in the coordination of

daily tasks as well as the knowledge exchange with the company partners. The post-doc will also support the PhD students in structural and chemical analysis.

For more information about the project please contact the principal investigator (PI) Dr. Georg Pfusterschmied (georg.pfusterschmied@tuwien.ac.at).

Your Profile

For this most ambitious project we are looking for a motivated experienced researcher fulfilling these requirements:

- PhD or comparable degree in electrical engineering, physics or in a comparable field
- A solid background in the electrical characterization of wide bandgap semiconductors
- Expertise in structural and chemical analysis of semiconductors (TEM, XRD, XPS, SIMS, AFM).
- Experience with 4H-SiC is regarded as a strong plus
- Knowledge micro- and nanofabrication and/or thin film deposition/analysis is beneficial
- Deep interest in scientific problems and the motivation for independent and goal-oriented research
- Ability to develop methods, concepts, as well as their realization and evaluation and the willingness to contribute to an interdisciplinary scientific project
- Organizational and analytical skills as well as a structured way of working
- Solid written and oral communication skills in English

We Offer

The successful candidate will work in the group of Prof. Ulrich Schmid under the guidance of Dr. Georg Pfusterschmied as PI at the Institute of Sensor and Actuator Systems located in the center of Vienna. The institute offers an international environment and excellent infrastructure. You can find more information about the group and the institute at https://mst.isas.tuwienP.ac.at/home/. In addition, we offer

- Continuing personal and professional education and flexible working hours
- Central location of workplace with very good accessibility (U1/U4 Karlsplatz)
- A creative environment in one of the most livable cities in the world
- A highly competitive salary (Salary of the position is according to collective labor agreement for employees at universities, salary group B1, based on 40 hours per week, a gross salary of currently EUR 56.861,70 per year)

- Additional benefits for employees can be found at the following link: Fringe-Benefit Catalogue of TU Wien

Your Application

We invite highly qualified and motivated researchers with a PhD having a strong interest in defect characterization of compactified nano-porous 4H-SiC layers to send us your detailed application documents (including a letter of motivation and CV) in a single pdf file via email.

to postdoc3662@tuwien.ac.at **until December 11th, 2022**

Candidates are not eligible for a refund of expenses for travelling and lodging related to the application process. TU Wien intends to increase the number of women on its faculty and therefore specifically invites applications by women. Among equally qualified applicants, women will receive preferential consideration.