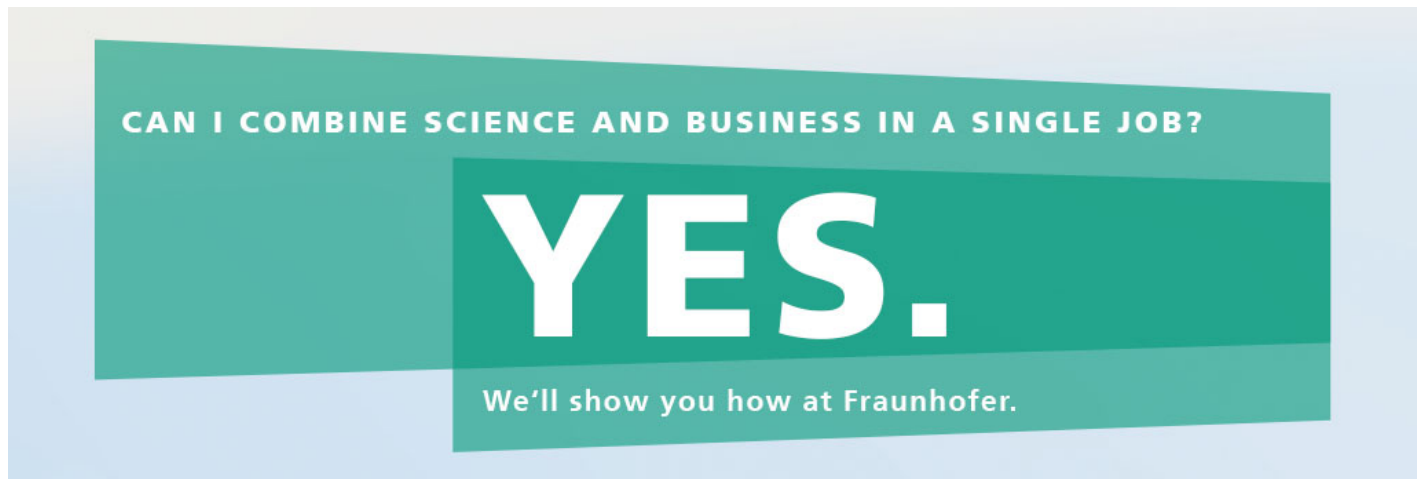


# Stellenbezeichnung: Research engineer in the field of active silicon photonics (IOF-2022-103)



## Research engineer in the field of active silicon photonics (IOF-2022-103)

Fraunhofer is the largest organization for application-oriented research in Europe. Our research fields are geared to people's needs: Health, Safety, Communication, Mobility, Energy and Environment. We are creative, we shape technology, we design products, we improve processes, we open up new paths.

The Fraunhofer Institute for Applied Optics and Precision Engineering IOF in Jena conducts application-oriented research on behalf of industry and within the framework of publicly funded joint projects. The range of services offered by the Fraunhofer IOF includes system solutions, starting with new design concepts, through the development of new technologies, manufacturing and measurement processes, to the construction of prototypes and pilot series in the wavelength range from millimeters to nanometers.

The project group SILIQUA ("silicon-based photonic building blocks for on-chip lighting, modulation, sensing and quantum applications") at Fraunhofer IOF deals with active silicon photonics, in particular the functionalization of silicon resonators with electro-optically active coatings or defects. Nanoscopic modulable photonic silicon resonators will be developed to integrate them in prototypes of photonic silicon LEDs, lasers, quantum light sources, modulators or sensors on the chip level. In the process, the design and fabrication of the resonator structures will be optimized using machine learning methods.

To support the project group SILIQUA, we are looking for a research engineer for micro and nanostructure fabrication and the deposition of thin films. You will be responsible for the materials manufacturing chain, its precise documentation, and the basic characterization of the fabrication processes and results. You will work closely with scientific team members on the systematic materials optimization.

### What you will do

- Develop electron beam or laser lithography recipes for the masking of silicon wafers
- Develop and run reactive ion etching recipes for the fabrication of silicon photonic structures
- Collaborating with the other SILIQUA group members on tailored silicon resonator design
- Perform atomic layer deposition of optically or electro-optically active thin films
- Development of pn-junctions in silicon wafers by diffusion or implantation and annealing
- Basic characterization of experimental results using methods like IV-testing, atomic force microscopy, scanning electron microscopy, optical microscopy and spectroscopic ellipsometry
- Build up a database on project related fabrication recipes and experimental results and use it for the design of experiments
- Collaboration with other in-house groups on materials fabrication and characterization related topics

### What you bring to the table

- You successfully completed a university degree, in the field of engineering, materials science or a comparable field
- You have hands on experience in in the field of micro- and nanostructure technology, in particular with lithography, reactive ion etching and atomic layer deposition
- Ideally you have worked with at least one of the following characterization techniques: ellipsometry, scanning electron microscopy, atomic force microscopy
- You have a high technical understanding as well as strong analytical skills
- Excellent communication and teamwork skills as well as an independent, pro-active, creative, and diligent way of working characterize you
- As Fraunhofer IOF works on an international level in many ways, we require a good command of written and spoken German and English

### What you can expect

- The opportunity to do research in a new field at the interface of materials science, photonics, and quantum optics
- Independent work as well as personal and professional development opportunities in challenging and applied R&D projects
- Networking with first-class research and industry partners
- Modern-equipped working environment
- Flexible working hours and a family-friendly workplace

The weekly working time covers 50%. The position is initially limited to 3 years with possibility of prolongation. Appointment, remuneration and social security benefits based on the public-sector collective wage agreement (TVöD). Additionally Fraunhofer may grant performance-based variable remuneration components.

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.

**Interested? Apply online now. We look forward to getting to know you!**

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Application Deadline: 12/12/2022

