Anbieter

Universität   Universität Stuttgart
Institut/Einrichtung   3. Physikalisches Institut
Kategorie   Wissenschaftl. Stellen

Angebot

Titel   PhD in nano-photonic & -phononic integration of spin defects in silicon carbide

Einsatzort   Pfaffenwaldring 57  70569 Stuttgart  Deutschland

Beschreibung

Description:
The 3rd Physics Institute in Stuttgart is a pioneer in developing cutting-edge quantum information technologies based on optically active spin systems in solids [1].

Our recent advancements showed that silicon vacancy colour centres in semiconductor silicon carbide (SiC) provide uniquely robust interfaces for spin-photon and photon-phonon interactions [2,3]. The SiC platform holds great promises for developing scalable quantum technologies thanks to its large availability and industrial relevance in high-power electronics.

Our research roadmap is outlined to integrate single colour centres into SiC photonic/phononic nanostructures in a controlled way. In this regard, our latest results demonstrated that silicon vacancy centres preserve their excellent optical and spin properties even in nanostructured environments.

The available PhD projects aim at realising robust and scalable spin-photon-phonon quantum interfaces, and to exploit them in quantum networking, multi-qubit quantum computation, and quantum sensing.

We seek highly motivated PhD candidates to join our team in the following topics:

- Fabrication of SiC waveguide and cavity structures using plasma etching, chemical mechanical polish, and focussed ion beam techniques.
- Systematic studies on the atomic-scale influence of surface passivation and annealing.
- Application of semiconductor PIN diode structures to locally control SiC colour centres.
- Well-controlled colour centre creation via focussed ion beam implantation.
- Realisation of efficient light coupling from SiC waveguides to optical fibres.

The 3rd Physics Institute offers:

- Work in a leading group for quantum information technologies and applications.
- Full availability of cutting-edge equipment for nanofabrication and investigation.
- Interdisciplinary and diverse research (physics, material science, informatics, electronics, ...).
- Work within strong international collaborations and networks.
- Great opportunities for career step-ups in academia and industry.
Successful candidates possess the following skills:

- High level of motivation and demonstrated ability to work in a highly structured way.
- Basic experience with experimental (quantum) optics.
- Willingness to learn device programming and experimental control in Python.
- MSc degree (or equivalent) in physics, informatics or electrical engineering.
- Considered as a plus: Experience with Comsol and/or device programming with Python, C/C++.

Applications can be submitted until 28th of February 2021. To apply for a position, send your CV and motivation letter in a single PDF to:
Dr. Florian Kaiser
Email: f.kaiser@pi3.uni-stuttgart.de

Additional Information:
Salary is according to the German TVL-E13, 75%. If application documents are not sent via email, note that applications submitted in paper format cannot be returned, so please do not send original documents.

The University of Stuttgart is an equal opportunities employer. Applications from women are especially encouraged. Full time positions are generally divisible. Severely challenged persons will be given preference in case of equal professional qualifications. Employment is carried out by the Central Administration.

Information according to article 13 of the General Data Protection Regulation (GDPR) for job application processes at University of Stuttgart can be found here: https://www.uni-stuttgart.de/en/privacy-notice/job-application/

References:

Bitte beziehen Sie sich in Ihrer Bewerbung auf https://www.stellenwerk-stuttgart.de/