

The Leibniz Institute for Solid State and Materials Research Dresden e. V. (IFW Dresden) conducts modern materials research on a scientific basis for the development of new and sustainable materials and technologies. The institute employs an average of 500 people from over 40 nations and, in addition to its scientific tasks, is dedicated to promoting young scientists and engineers. Further information at: <http://www.ifw-dresden.de>.

The Institute for Integrative Nanosciences (IIN), Leibniz IFW Dresden e.V. is one of the world leaders in the domain of semiconductor quantum light sources and provided pioneering contributions to the design, fabrication and characterization of self-assembled quantum dots. Quantum dots are a promising platform for the realization of devices of the quantum internet, such as sources of entangled photon sources, quantum repeaters and one-way quantum computing. In order to realize these devices, high quality droplet etched GaAs quantum dots with specific properties are used. Recently, we have demonstrated single source entanglement swapping and GHz-clocked emission using our leading quantum dot-based entanglement photon sources. We aim to deepen and diversify the investigations of quantum dot-based quantum information systems and therefore offer a **PhD position** on the topic:

“Development of high-quality charge-tunable GaAs quantum dot based entangled photon pair sources using molecular beam epitaxy”

Your profile: We are looking for a highly motivated and team-oriented student (m/f/d), who holds a master's degree in physics, nanoscience, chemistry or material science. Basic knowledge of solid state and semiconductor systems, thin film growth as well as optical lithography is welcome. The successful candidate (m/f/d) is enthusiast about fundamental and material science as well as enjoys practical work. Very good communication skills in written and spoken English are required.

Project description: The successful PhD candidate (m/f/d) will be responsible for the optimization of high-quality droplet etched GaAs quantum dots using molecular beam epitaxy (MBE) as well as their structural and optical characterization using spectroscopic techniques. This task comprises the growth of GaAs quantum dots in different heterostructures to improve and control their properties according to the requirements. Recently, charge-tuning of these quantum dots embedded in micro-membranes using sophisticated lithography and growth techniques has been envisioned. Realizing such a device by employing lithographic sample processing techniques will be a secondary focus of the successful PhD candidate (m/f/d). The candidate (m/f/d) will be integrated into the Quantum and Nanophotonics team of Dr. Caspar Hopfmann and will be able to develop his/her skills as a young scientist (m/f/d).

Conditions: The employment relationship, including remuneration, is based on the federal German public employment standard (TV-L) according to pay group 13. If the candidate (m/f/d) is suitably qualified, we offer a weekly working time of 26 hours (65%). The employment is initially limited to 1 year, an extension for another 2 years is possible.

The institute promotes the professional equality between all genders. The IFW would like to increase the proportion of women in science. Qualified women are therefore explicitly invited to apply. Severely disabled applicants (m/f/d) are given preferential treatment if they have the same qualifications.

If you are interested in the position, please send your application with informative documents including a letter of motivation, curriculum vitae, proof of education, references, etc.) as a single pdf file (other formats will not be accepted) citing the **reference number 046-22-4320** to the following email-address:

bewerbung@ifw-dresden.de.

The position is published until 20.08.2022.

For technical queries, please contact Dr. Caspar Hopfmann: c.hopfmann@ifw-dresden.de.

