

Postdoc Position: Quantum devices from bottom-up synthesized graphene nanoribbons

The Nanoelectronics group in the Department of Synthetic Materials and Functional Devices at the Max Planck Institute for Microstructure Physics in Halle (Saale), Germany, is seeking a motivated PhD to work on the project of **Quantum devices from bottom-up synthesized graphene nanoribbons**. Ideal candidates will have expertise in quantum transport, including nanofabrication and low-temperature transport measurements.

Bottom-up synthesized graphene nanoribbons (GNRs) offer precise control over edge structures and topology, surpassing traditional top-down nanofabrication methods. Their unique electronic properties, shaped by quantum confinement, edge effects, and electron-electron or electron-phonon interactions, have garnered significant research interest. In this project, we will explore the novel fundamental transport physics and quantum phenomenon of graphene nanoribbons and related carbon nanostructures.

Your tasks

- Lead the development of novel quantum devices based on bottom-up synthesized graphene nanoribbons.
- Perform nanofabrication and charge transport measurement on these novel nanodevices.
- Collaborate closely with other members of the department to advance the new functional nanoelectronic devices and supervise students in the team.
- Drive the design and optimization of experimental setups, including nanofabrication tools, transport measurement tool, and related programming script.
- Disseminate your experimental findings through publications in scientific journals and oral presentations at international conferences and workshops.

Your profile

- A PhD degree in experimental physics, electrical engineering, materials science, or a related discipline.
- Strong expertise in nanofabrication and experimental condensed matter physics, particularly in electron beam lithography, charge transport measurements, and cryogenics.
- Deep understanding of charge transport physics, particularly in the quantum regime.
- Possess strong programming skills (e.g., MATLAB and Python,) for data analysis and experimental control.
- Communicate effectively and thrive in a collaborative research environment.
- Proficiency in English scientific writing, including but not limited to the preparation of scientific journal articles and research proposals.

We offer

- Access to leading research groups in the emergent field of quantum materials and devices.
- Competitive salary package aligned with your qualifications and experience.
- Access to cutting-edge research facilities and resources at the Max Planck Institute of Microstructure Physics.
- Opportunities for professional growth, networking, and international collaboration.

Additional information:

The positions are available immediately, although the start date can be negotiated. The initial contract duration is 24 months for the Postdoc position. The contract can be extended based on your performance.

The Max Planck Society is Germany's premier research organization dedicated to basic research and to supporting and developing early career scientists. It offers an excellent infrastructure and a very international environment that enables research at the highest level. The Max Planck Society seeks to increase the number of women in those areas where they are underrepresented and therefore explicitly encourages women to apply.

Your application

Please send your application Dr. Jian Zhang (jian.zhang@mpi-halle.mpg.de) including the following documents:

- A cover letter
- Your CV, including a publication list
- Contact details of two scientists who can provide references