

PhD student / Postdoc Opening

“Quantum Transport in High-mobility III-V based Nanowires”

The **Semiconductor Nanostructures and Quantum Systems Division** at the Walter Schottky Institut (WSI), Technical University of Munich (TUM) offers a PhD student / Postdoc position for an excellent candidate to work on a DFG-funded research program related to non-equilibrium phenomena and interactions in ultrapure III-V semiconductor nanowires.

In particular, in this project we aim to explore many-body correlation, spin-orbit interaction effects, as well as inelastic scattering and electron-phonon interaction effects in III-V based nanowires with high-mobility and strong spin-orbit coupling, where the tunability between different transport regimes (ballistic vs. diffusive) is exploited. Utilizing state-of-the-art device fabrication and low-noise, low-temperature quantum transport measurements these investigations are directly connected to the in-house development of quantum confined III-V nanowire channels via advanced synthesis methods at the WSI.

Key responsibilities:

Central tasks and methodologies employed will be state-of-the-art nanofabrication/lithography methods (e-beam, metal deposition, etc) for development of nanowire field effect transistor (NWFET) device structures, structure-electronic property correlations using advanced nano-metrology, as well as low-noise, temperature-dependent transport measurements on a state-of-the-art magnetotransport setup (B-field: 0-5T, T: 1.5-300K). Additionally, magnetoconductance measurements will be required to probe phase coherent transport properties, while simulations of semi-classical, quantum and magnetotransport transport should complement the experimental investigations.

Candidate profile:

Candidates are expected to hold a M.Sc. or Ph.D. degree in condensed matter physics, electrical engineering or similar with outstanding academic record and should possess exceptional motivation and creativity combined with very good communications skills and proficiency in English (oral and written). A strong background in nano- and quantum electronics of semiconductor-based nanostructures both experimentally and theoretically is an advantage. Knowledge of advanced quantum transport characterization, state-of-the-art nanofabrication and theoretical modelling is considered an asset. Hiring will start immediately.

Interested applicants should submit their application including cover letter (motivation), curriculum vitae, list of 3 references and relevant documentation (transcripts, certificates) to the PI of the project by **Email: Gregor.Koblmueller@wsi.tum.de**
PD Dr. Gregor Koblmüller, Walter Schottky Institut, TUM, www.wsi.tum.de/koblmueller

