



Universität
Basel

Research Project

Ultra high precision electron beam lithography system for nanodevice and nanostructures definition

Third-party funded project

Project title Ultra high precision electron beam lithography system for nanodevice and nanostructures definition

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Organisation / Research unit

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Department

Departement Physik

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Status Completed

In the last decades nano- and quantum-science have been steadily growing in large part also thanks to the availability of ever more advanced processing, manipulation, and imaging techniques. Specifically, nanofabrication has been the leading enabler of experiments and devices, in which quantum mechanics play a key role. The University of Basel is nationally and internationally recognized as a leader in nanoscience and nanotechnology. It was the leading house of the National Center in Competence and Research (NCCR) on Nanoscience, which later became the Swiss Nanoscience Institute (SNI). The University of Basel is leading the NCCR SPIN for the realization of spin qubits in Silicon and is also co-leading the NCCR QSIT on Quantum Science and Technology (with ETHZ as Leading House). The present proposal to the SNF R'Equip scheme is a joint effort of six principal investigators (PIs) in the physics department of the University of Basel, who work on current topics in quantum- and nano-science. The PIs, who submit this proposal together, do research that relies on the availability of state-of-the-art fabrication tools, such as an electron beam lithography (EBL) system. The proposal makes the case for the purchase of an ultra-high precision EBL system that combines high resolution, tunable acceleration voltages, different write-field size, ultra-high precision alignment, proximity correction, and mechanical stability. This combination is unique and crucial for the University of Basel to stay at the forefront of nano-science and technology. The system will be installed in the new clean room shared between the University of Basel and the Department of Biosystem Science and Engineering of the ETH. Therefore, the purchased system will be available for the users of the clean-room.

Keywords nanotechnology, quantum-science, electron beam lithography, nano fabrication, nanoscale devices

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