

4 PhD positions in Quantum Device Nanofabrication

We are delighted to offer 4 fully funded PhD positions as part of an international collaborative project aimed at pioneering new methods in quantum device nanofabrication. This Swiss National Science Foundation (SNSF) funded project, a joint effort by EPFL, University of Basel, and CNM-Barcelona, combines advanced nanopatterning, precision doping, and state-of-the-art surface characterization techniques to enable scalable quantum devices.

PhD 1 (EPFL): PhD in Thermal Scanning Probe Lithography (t-SPL) and Nanofabrication

	Focus: Develop and optimize thermal scanning probe lithography (t-SPL) for high-resolution nanopatterning. This position involves creating and integrating precise nanostructures down to the 20 nm scale into silicon-on-insulator (SOI) platforms, contributing directly to quantum device fabrication.
	Ideal Background: Microengineering, physics, physical-electronics, materials science, electronics, or related fields with interest or experience in nanofabrication and device physics
	Preferred start: Feb 2025
	Contact: Prof. Juergen Brugger juergen.brugger@epfl.ch

PhD 2 (EPFL): PhD in Polymer Precision Doping for Quantum Devices

	Focus: Explore polymer-based precision doping techniques for silicon, with an emphasis on deterministic placement of phosphorus dopants to create single-atom devices. The work includes developing and applying novel doping methods for quantum systems such as semiconducting qubits.
	Ideal background: Microengineering, Physics, Chemistry, materials science, or related fields with a focus on molecular doping and polymer chemistry
	Preferred start: Feb 2025
	Contact: Dr. Arnaud Bertsch arnaud.bertsch@epfl.ch and Prof. Juergen Brugger juergen.brugger@epfl.ch

PhD 3 (Uni Basel): PhD in Kelvin Probe Force Microscopy (KPFM) and Surface Characterization

	Ideal background: Experimental Physics, Material Science, and preferable knowledge in Scanning Probe Microscopy
	Focus: Conduct high-resolution KPFM measurements for surface characterization of quantum nanostructures. This position will focus on analyzing single-atom doping at the nano level and feedback process optimization, enabling precise dopant placement for quantum applications.
	Advanced Atomic Force Microscopy in N ₂ environment and in ultrahigh vacuum, surface characterization of semiconductors and molecular layers, electrospray deposition of molecules, Scanning Tunneling Microscopy, Kelvin Probe Force Microscopy.
	Preferred start: Feb 2025
	Contact: Dr. Thilo Glatzel (thilo.glatzel@unibas.ch)
Further details: https://nanolino.physik.unibas.ch/en/open-positions/	

	The 4 th PhD student will be working at CNM UAB (separate recruiting mechanism) and has following topic: Directed Self-Assembly (DSA) of Block Copolymers for Nanofabrication.
	Contact: Dr. Marta Fernández-Regúlez marta.fernandez@imb-cnm.csic.es and Prof. Francesc Perez-Murano Francesc.Perez@csic.es

Why Apply?

- Join an internationally renowned team working across EPFL, University of Basel, and CNM-Barcelona in a highly interdisciplinary environment.
- Gain hands-on experience in nanofabrication, surface analysis, and quantum technology through access to cutting-edge facilities.
- Contribute to high-impact research with real-world applications in quantum computing, artificial lattices, and single-dopant semiconducting qubits.
- Engage in a vibrant collaborative project that provides a robust foundation for a future career in academia or the tech industry.

Applications are open immediately.

If you are passionate about quantum technologies, nanofabrication, and precision engineering, we encourage you to apply!