

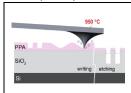




4 PhD positions in Quantum Device Nanofabrication

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



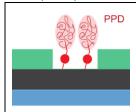
Focus: Develop and optimize thermal scanning probe lithography (t-SPL) for high-resolution nanopatterning. This position involves creating and integrating precise nanostructures down to the 20 nm scale into silicon-on-insulator (SOI) platforms, contributing directly to quantum device fabrication.

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



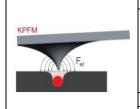
Focus: Explore polymer-based precision doping techniques for silicon, with an emphasis on deterministic placement of phosphorus dopants to create single-atom devices. The work includes developing and applying novel doping methods for quantum systems such as semiconducting qubits.

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 <u>arnaud.bertsch@epfl.ch</u> and Prof. Juergen Brugger juergen.brugger@epfl.ch

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



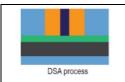
Ideal background: Experimental Physics, Material Science, and preferable knowledge in Scanning Probe Microscopy

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 **4th PhD student** will be working at CNM UAB (separate recruiting mechanism) and has following topic: Directed Self-Assembly (DSA) of Block Copolymers for Nanofabrication.

 $Contact: Dr.\ Marta\ Fernández-Regúlez\ \underline{marta.fernandez@imb-cnm.csic.es}\ and\ Prof.\ Francesc\ Perez-Murano\ \underline{Francesc.Perez@csic.es}$

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!

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