

# PhD in Quantum optomechanics with photonic crystal cavities

Mon, 2014-11-10 11:05 - [Simon Groeblacher](#) [1] **At:** Delft University of Technology, Department of Quantum Nanoscience

**Deadline:** 31 January, 2015

## Location

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52° 0' 3.2112" N, 4° 22' 26.6484" E  
See map: [Google Maps](#) [2]

One of the remaining puzzles in modern physics is the transition from quantum to classical physics. While many models, like decoherence, have been proposed, experimental tests remain very challenging. One of the most promising avenues for observing quantum effects at a macroscopic scale has been through optomechanics in which the radiation pressure of light is used to probe and control the dynamics of mechanical oscillators. The proposed project in the newly established Groeblacher Lab will be based on innovative mechanical structures that will combine high reflectivity and low dissipation in order to push optomechanics experiments into novel regimes, like the single-photon strong coupling regime, to ultimately probe the elusive boundary region between classical and quantum physics. The project will involve design and fabrication of and experiments with optomechanical systems based on photonic crystal devices.

The Department of Quantum Nanoscience at the TU Delft is an exciting, collaborative environment with several world-renowned research groups. The department is focused on Quantum Theory, Quantum Information Science and Quantum Devices & Materials. The research is supported by state-of-the-art facilities, in particular the cleanroom facilities for realizing next-generation nanostructures.

The successful candidate will have the opportunity to learn new experimental techniques (microfabrication, quantum optics, cryogenics, ...), understand the underlying principles of optomechanical systems (classical / quantum mechanics, condensed matter physics, optics) and to gain a deep knowledge in finite element simulation and advanced computer based experimentation (IPython, Matlab, C#, ...).

**Additional information:** <http://groeblacherlab.tudelft.nl> [3]

**Contact:** Please send inquiries / applications (cover letter, CV, reference letters) to [s.groeblacher@tudelft.nl](mailto:s.groeblacher@tudelft.nl) (subject: PhD%20position) .

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