

PhD vacancy on *Optical Near-field Electron Microscopy* @ Leiden Institute of Physics

The overarching program

This PhD project is part of the European FET-Proactive program [ONEM](#). The latter stands for optical near-field electron microscopy, which is an exciting new microscopy technique that we are developing with colleagues in Vienna and Prague. The basic goal of ONEM is to find the optimum between optical imaging and electron microscopy. The envisioned technique is damage-free, requires no labels, and allows for a resolution on nanometer scales. In a nut shell, we combine visible-light illumination of the sample with low-work-function photoemission in the near field and, finally, electron imaging. For an extensive explanation see: [Phys. Rev. Applied 16, 014008 \(2021\)](#).

Although a typical high-risk, high-gain project at first, by now we can say that (blue light) ONEM has been successfully demonstrated. It works! But it can still get much better in terms of resolution, wavelength range, contrast, temporal resolution and versatility.

Your project

In this PhD trajectory, you will be part of the team in Leiden, which is where the ONEM setup is located. Your task is to perfect ONEM, by optimizing (polarized) illumination, photocathode performance, and sample handling. Special care will be given to the introduction of a liquid cell within which we can follow 'live' dynamics. Thus you will be able to perform a series of unique experiments, aiming specifically for dynamics of biological systems and nano-sized growth via electrodeposition. Basically, in your PhD time, we expect to reap what has been sowed in the first stages of our program.

Your skills

We are looking for a motivated and skilled experimental physicist or applied physicist (MSc; f/m) who combines scientific curiosity with a hands-on mentality. A background in condensed matter physics, biophysics, electrochemistry and/or electron microscopy is helpful. The position requires you to work in a team, both locally, and internationally.

What we offer

We offer a collaborative, enthusiastic and scientifically strong environment in a renowned research institute, the Leiden institute of Physics, where the input of each person is valued equally. Furthermore, you will be part of the international ONEM team, that also connects to the U.S. and Germany. The work is expected to lead to high-impact publications and international visibility. Note that in the Netherlands, a PhD candidate is considered an employee with all the benefits that come with that. Finally, Leiden is a beautiful town close to the beach, with a great academic tradition and atmosphere.

Information and application

The vacancy is open as of August 17, 2023. Feel free to apply directly or to ask for more information. If you apply, please include a CV and a relevant motivation letter with the names of two references.

Applications are to be sent to Ms. M. Wijfje (wijfje@physics.leidenuniv.nl)

For more information, please contact Prof. Dr. Sense Jan van der Molen (molen@physics.leidenuniv.nl)