

PUSH THE FRONTIERS OF LIFE SCIENCES – MICROSCOPY ACROSS SCALES.

[The Group of Prof. Dr. Walter at the Centre of Optical Technologies \(ZOT\)](#) aims at developing novel correlative microscopy solutions to facilitate imaging across scales in life sciences – in close collaborations with regional industrial partners: We plan to combine advanced fluorescence microscopy with electron microscopy to visualize molecules within their subcellular context at high resolution using Correlative Light and Electron Microscopy (CLEM). Specifically, we envision a unique advanced super-resolution and volume CLEM workflow under cryo-conditions that allows us, together with our collaboration partners, to tackle specific biomedical research questions that could not be answered before due to the lack of accessible solutions. This is a highly interdisciplinary project between physics, engineering, optics, and life sciences, and **we are looking for**

A PhD Student (3 years, E13, 70%) within the EU-funded Marie Skłodowska-Curie Doctoral Networks Action under Horizon Europe

To help us tackle several biomedical showcase projects (from microplastics to nanoparticles for targeted cancer therapy) by building and applying novel CLEM techniques. **This is an exciting position since it is part of a European network of 13 partners & universities that will host all PhD candidates during secondments. The project will give candidates the opportunity to work closely with different imaging modalities while allowing them to network with other candidates and other project supervisors: <https://clexm.eu/>**

Key responsibilities & Qualifications

The position involves For the implementation of the project, according to your skill set and interests, you will work on **(1)** building a cryo-super-resolution microscope, **(2)** establishing Focused Ion Beam Scanning Electron Microscopy (FIBSEM) for biological samples at Aalen University, and **(3)** setting up correlative (automated) workflows between the two imaging techniques.

Your primary responsibilities will include:

- Building a super-resolution microscope at room temperature, including hardware control and image analysis
- Implementation at cryogenic conditions
- Application to biomedical research questions
- FIBSEM data acquisition at a few nanometers' resolution
- Correlative imaging using light & electron microscopy and image registration
- Optimization of electron microscopy sample carriers by micropatterning
- Confocal microscopy
- Sample preparation and optimization
- Cell culture

Your qualifications should include:

- Master's degree in physics, biomedical engineering, or similar
- Proven experience in advanced fluorescence microscopy and optical alignment
- Highly proactive, driven, and independent team player

In addition, it would be beneficial to have experience in:

- Cell biology, cell culture, and tackling biomedical research using bioimaging
- Image processing
- Hardware control
- Electron microscopy
- Cryo-microscopy
- Correlative light and electron microscopy

How to apply

If you are interested in R&D in advanced microscopy with different radiations (from light to electrons), biophotonics, biomedicine, and image & data processing and want to help push the frontiers in cell biology, we look forward to receiving your application (motivation letter, CV, 2 reference letters or contact list of referees, and any other relevant information). Please send in one pdf file to **Andreas Walter** [andreas.walter@hs-aalen.de] by **April 3rd, 2024**. For further information about the position please contact Prof. Dr. Andreas Walter.

High throughput 3D Light & Electron Microscopy under native/cryogenic conditions below the diffraction limit

