

## PhD Proposal 2023

School - Location: Ecole Centrale Marseille	
Laboratory: Institut Fresnel	Web site: <a href="http://www.jeromewenger.com">www.jeromewenger.com</a>
Name of the supervisor: Jerome WENGER	Email: <a href="mailto:Jerome.wenger@fresnel.fr">Jerome.wenger@fresnel.fr</a>

Title: UV autofluorescence microscopy
Scientific field (one among the list- remove other choices): Natural & Life sciences: Physics & Astronomy
Free Key words: microscopy, photonics, fluorescence

### Details for the subject:

The Institut Fresnel is a research state laboratory based in Marseille / France, devoted to research and higher education in all areas of optical and photonic sciences. Institut Fresnel is seeking to recruit talented, enthusiastic young scientists who are highly motivated to boost their research career in the areas of nano-optics and/or biophotonics.

This project aims at using the natural autofluorescence property of proteins in cells to perform optical microscopy. This will enable imaging bio-samples without introducing any external staining or labelling species (color dye, fluorescent molecule, quantum dot...) and provide a novel way to observe cellular tissues and biomolecular filaments.

We aim at developing two microscope systems:

- a wide-field camera-based microscope using a UV-LED illumination
- a confocal UV microscope using a UV 266 nm laser and a UV photomultiplier detection.

This UV confocal microscope will be integrated into a visible microscope to allow dual-color (UV & visible) imaging.

The project will develop the microscopes, assess their optical performance, and exploit their properties to image biosamples.

These new microscope tools will enable addressing various scientific questions:

- What is the role of the fluorescent dye in imaging microfilaments? Does it introduce errors or artifacts?
- What is the influence of the UV illumination on biosamples? Is there UV photodegradation and how can we quantify it?

#### References:

Supervisor Dr Jerome Wenger

Google Scholar Jerome Wenger <https://scholar.google.fr/citations?user=K3ujBLwAAAAJ&hl=fr>

#### Contacts

For general information, visit [www.fresnel.fr/mosaic](http://www.fresnel.fr/mosaic)

For updated information, visit [www.jeromewenger.com](http://www.jeromewenger.com)