

Parcours EuroPhotonics - Year 2021 - 2022

- Personal Project (Master 1)
- Internship (Master 1)**
- Apprenticeship (Master 2)
- Master Thesis (Master 2)**

Name of host organization : Institut Fresnel

Mail address : **Faculté des Sciences de St Jérôme 13013 Marseille**

Title: UV autofluorescence microscopy

Name of the supervisor(s): Jérôme Wenger

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Summary of the subject (maximum 1 page) :

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?

Additional information (optional):

* Keywords : microscopy, nanophotonics, fluorescence

* Required skills : motivation

* Salary : for internships according to usual practice

* Begin/End dates (min 7 weeks for Internship): to be discussed

* Miscellaneous : webpage www.jeromewenger.com twitter @PhotonicsNano