

ESR 3 Information Sheet

Project title: Spectral tissue imaging for ex-vivo cancer diagnosis and survey

Host institution/company: HORIBA FRANCE SAS, Villeneuve d'Ascq (France).

Supervisors

- *Academic:* Prof. Olivier Piot, Director of the Translational BioSpectroscopy laboratory (BioSpecT) (France)
- *Industrial:* Dr. Sébastien Legendre, HORIBA FRANCE SAS (France)

Type of contract: 36-months full-time research grant within the PHAST-ETN project.

Brief description of the project: HORIBA FRANCE SAS is notably the world leader in Raman spectroscopy, designing and manufacturing state of the art dispersive Raman spectrometer systems for over fifty years. The ESR will work on the development of Stimulated Raman Scattering with a focus on the improvement of Stimulated Raman Gain Opposite Loss Detection. This work will allow to improve the combination between Raman spectroscopy/imaging and coherent Raman imaging on the same platform. Research protocol based on the new HORIBA "Correlative Microscopy" solution will be also developed in order to compare results obtained by Raman with other imaging or spectral modalities, such as fluorescence, multiphoton microscopy, polarimetric imaging, OCT... In parallel the ESR will also participate to the development of a multimodal imaging software to fasten the data interpretation.

As an outcome, comparison between coherent and non-coherent techniques and the benefit of their combination will be made.

Planned secondments at **University of Reims Champagne-Ardenne** (France), **Leibniz-Institute of Photonic Technology** (Germany), **Medical University of Vienna** (Austria)

Qualifications

Essential

- Applicants should hold or expect to attain, as a minimum an MSc in Physics, Chemistry, Optics/Photonics or related area.

Knowledge and Experience

Essential

- A demonstrated knowledge of at least two of the following: optical spectroscopy / microscopy and their application in biomedicine, photonics / optics, laser physics, optical design, nonlinear optics, electronics, technical programming language (C++, python or Labview), image analysis.

Desirable

- Research project carried out in at least one of the above disciplines.

Skills and Competencies

Essential

- Applicants whose first language is not English must submit evidence of competency in English,
- Evidence of interest, aptitude and research experience in the above disciplines.

Further information

For any informal queries, please contact Prof. Olivier Piot by email at olivier.piot@univ-reims.fr and Dr. Sébastien Legendre at sebastien.legendre@horiba.com