SHORT TRAINING COURSE

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CONFOCAL RAMAN MICROSCOPY FOR BIOLOGY

PRESENTATION

Raman spectroscopy is a non-invasive, label-free technique that provides detailed molecular information about biological samples (cells, tissus, organoids...). Reconstruction of chemical cartography through analysis of the scattering of light as it interacts with molecular vibrations (optical phonons), offering insights into the composition and structure of biomolecules like proteins, lipids, and nucleic acids. It is widely used in cell biology, cancer research, and metabolomics.

OBJECTIVES

- Understanding the basic principle of light-matter interaction
- Understanding the information gathered with Raman spectroscopy
- Understanding the possibilities offered by a Raman microscope for biology
- Learning how to manipulate data (spectrum alone or scan of an area of interest) to reconstruct chemical maps

TARGET AUDIENCE

Researchers, teachers, engineers and technicians interested in the possibilities offered by existing Raman systems, which are widely developed today.

Laptop required
If you encounter any problems with this, please contact us

DATES

23th and 24th april 2026

TRAINING SCHEDULE

12 hours of theoretical and practical training

TRAINING FEE

400€ (includes light breakfasts, midday meals and coffee breaks)

TRAINING LOCATION

Université de Montpellier
UFR Odontologie

CONTACT

Academic contact
Alban DESOUTTER (LBN)
alban.desoutter@umontpellier.fr

Administrative contact
sfc-formations@umontpellier.fr

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DAY1 – Thursday 23th April 2026

10:00 - 10:30	Opening Remarks – Light breakfast
10:30 - 11:00	Theory of Raman scattering : basic concepts
11:00 - 12:00	Overview of the history of the emergence of microscopy Raman for the study of the biology
12:00 – 01:00	Lunch break
13:00 - 14:00	Explanation of a Raman system setup
14:00 - 14:45	Introducing the latest microscopes
14:45 - 15:00	Coffee Break
15:00 - 16:00	Presentation of spectra and signal processing
16:00 - 17:00	Reconstruction of Raman images with filter (intensity, FWHM…) and Kmean Cluster methods
17:30 - 19:00	Examples of studies conducted on calcified cells and tissues

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CONFOCAL RAMAN MICROSCOPY FOR BIOLOGY

TRAINING COURSE

DAY 2 – Friday 24th April 2026

09:00 - 09:30	Light breakfast
09:30 - 12:30	Demonstration of the manipulation on Alpha 300R Raman lens assembly by groups and manipulation on acquired data
12:30 – 13:30	Lunch break
14:00 - 16:00	Visit to BCARS: presentation and demonstration at the L2C (Laboratoire Charles Coulomb)

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