Description & Main outcome:

IR spectroscopy is a promising way to detect cancer. This is because it can measure the chemical composition of cells and tissue and use it to visualize structure and to detect if cancer is present. This is interesting for clinical applications because chemical staining of the sample is not needed, which could greatly simplify current protocols for cancer detection. However, the spatial resolution of common IR spectroscopy is not sufficient to resolve details in individual cells.

With this project, we want to apply IR nanospectroscopy on cells and tissue sections. The goal is to visualize subcellular structure based on chemical contrast and to test if there is a benefit of nanoscale spatial resolution for the detection of cancer.

The prospective student will engage in the following activities in the Nanooptics labs at CIC nanoGUNE.

> (i) Design and optimize sample preparation protocols for IR nano-imaging
> (i) Performing spectroscopy of invidiual cells on state-of-the-art IR nano-imaging instrumentation.
> (iii) Perform numerical calculations of SNOM to understand and validate image contrast

This project can be tailored to focus either on experiment work or on numerical calculation, according to the interests of the prospective student.

Application:

If you are a master student and you are interested in this project, please get in touch with the scientist in charge: **Martin Schnell (m.schnell@nanogune.eu).**

To apply for a **master scholarship**, fill in the form below and follow the instructions and recommendations of the general call **open until 30 June 2023**.

NOTES:

(i) All applicants will receive an answer after the end of the selection process; but please note that due to the large number of submissions that are expected, we cannot provide individual feedback.

(ii) Additional information about nanoGUNE's commitment towards HR excellence in Research and Gender Equality are available on our website.

(iii) We encourage you to subscribe to our HR mailing list to receive information related to nanoGUNE's open positions and open calls for different training and talent attraction programs.