

# Research Accelerator Programme

## “Terahertz spectroscopy and imaging”

**Where:** CROMA (CNRS-FMNT), Le Bourget du lac, France

**When:** November 19, 20 and 21, 2024

**Application Deadline:** September 25<sup>th</sup>, 2024, 2PM CEST

### Summary

This RAP will present the basics of spectroscopy and imaging in the Terahertz (THz) range and give the opportunity to discover the characterization systems available at CROMA Lab. (CNRS-FMNT) on the Terahertz platform (<https://infrachip.eu/platera-platform/>)

*INFRACHIP will support costs for travel, accommodation and access to infrastructure for up to 8 applicants. Applicants should be PhD students and junior researchers with a PhD completed in the last 2 years.*

### Programme

For participants, the objectives are:

- To understand the various principles involved in generating and detecting pulsed THz signals and be able to implement them experimentally as part of a TDS spectroscopy experiment.
- To understand the basics of THz imaging; understand the fundamentals of generating and detecting THz signals using optical non-linear effects.
- To take into account the technological challenges specific to this electromagnetic domain (long wavelengths, low electromagnetic energy)

During its 3 days, 3 modules will be addressed:

#### THz basics

- Components for the generation, detection and shaping of THz waves.
- Basics of the pulse technologies used to generate THz signals and their use in various fields of research.
- Basics of THz generation (optical rectification) and detection (electro-optical sampling) using optical non-linear effects.
- Principles and potential of THz imaging.

### Time Domain Spectroscopy

- Use of commercial TDS equipment for THz spectroscopy applications.
- Data processing of the experimental results to extract the sample characteristics.

Different kind of samples will be addressed such as anisotropic samples and samples with high absorption peaks.

- Optimization of a home-made TDS setup.

### THz Imaging

- Use of commercial TDS equipment for THz imaging applications (raster scanning)
- Process of the THz image obtained.

To apply, please fill the form on the dedicated RAP website page: <https://infrachip.eu/research-accelerator-programme>

In case of troubles, please contact us – [contact@infrachip.fr](mailto:contact@infrachip.fr)

