

Looking for a PhD? Join the THz team at the “Laboratoire de Physico Chimie de l’Atmosphère” at Dunkerque (<https://lpca.univ-littoral.fr>) to develop a new technique for trace gas detection in the submillimeter domain. Working in this frequency domain for more than 20 years, the THz team has a track record in development of high sensitivity gas phase spectroscopy, recognized worldwide. We propose a PhD project to participate to our next challenge to develop the first Cavity Ring-Down Spectrometer (CRDS) operating at THz frequencies. Such a technique is well established in the Infrared region, and presents very high potential in terms of sensitivity. The challenge will be to adapt this Infrared technique to the THz, and so to be able to implement a high finesse cavity. A first approach with great potential has already been protected by a patent.

The future motivated PhD-student will have to develop, improve and boost preliminaries specifications we have obtained. This very new spectrometer will be used for pure fundamental spectroscopy investigations and also for more applied thematics like the inspection of food quality, pollutant detection, and more challenging to detect potential diseases by analysis of exhaled breath.

At present, this project is partially support by the SATT-Nord a technology transfer accelerator. This experimental topic requires strong and broad skill set subjects like gas phase spectroscopy, instrumentation, electronics, signal processing and computer programming.

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