

## **“Fundamentals and applications of GC, GC-MS and GCxGC” – course learning outcomes**

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In this course, we aim to introduce the basic principles of gas chromatography and its hyphenation with different type of injectors and detectors. We will also cover the fundamentals of multidimensional methods.

### **Course outlines**

- A. GC: important basics (principles, injectors, columns, detectors, sample introduction)
- B. GC-MS: important basics (mass spectrometer (Q and TOF), mass spectra, deconvolution, HRMS for GC)
- C. 2D-GC: basics, principles (modulation and modulators, important parameters, GCxGC-(HR)MS)
- D. GCxGC: method development, optimization, data treatment, data processing

### **Learning outcomes**

At the end of the course, each participant will be familiar with the following concepts in GC and GCxGC:

- **GC principles:** participants will master the fundamentals of GC, including general principles, separation mechanism, important parameters affecting the separation.
- **GC injectors:** participants will be familiar with the different injection mode for liquid samples. He will also acquire basic knowledge on volatile molecules sampling using SPME and trap tubes.
- **GC detectors:** participants will acquire with the main detector used with GC, including MS and non-MS systems.
- **2D-GC concept:** participants will acquire basic principles of multidimensional GC, including the idea behind the approach and the principles of heart-cutting and comprehensive.
- **GCxGC-MS introduction:** participants will be introduced to the hardware around GCxGC-MS, the method requirement, the specific hardware parts (modulators, detectors) and the key parameters to optimize.