

EXPERTISE AT UGENT

ADVANCED CHEMICAL ANALYSIS

OUR TOOLBOX

Solutions based on innovative approaches and state-of-the-art technology or combinations of technologies such as advanced NMR methods, chromatographic technologies including advanced GC, LC, electrophoresis CEC, SFC, Atomic and mass spectrometry based on coupling of ICP-MS with HPLC, GC and CE, Isotopic analysis using TIMS or multi collector ICP-MS or using electro thermal vaporization (ETV) or laser ablation (LA), X-ray crystallography (XRD) techniques and Vibrational Optical Activity methods, including Vibrational Circular Dichroism (VCD) and Raman Optical Activity (ROA).

High performance Chromatography

Use of Advanced separation techniques such as Gas chromatography (GC), Liquid Chromatography (HPLC, LC), Capillary Electrophoresis & Capillary Electrochromatography (EP & CEC), Supercritical Fluid Chromatography (SFC). With focus on hyphenation techniques; i.e. Coupling the separation techniques to state-of-the-art spectroscopic detectors, such as MS detectors and NMR. e.g. – column and stationary phase development, comprehensive (LCxLC) system development, pre-concentration phases for femtogram analysis, method development and modeling.



X-Ray crystallography

Use of Single Crystal X-Ray Diffraction (XRD), (crystallization + X-ray structure determination), for crystallographic services for: Small (in)(metal-)organic molecules, Metal-organic frameworks (MOFs), Determination of the absolute configuration.

Vibrational Optical Activity methods

Analytical service centre providing a knowledge based service for applications requiring structural elucidation of chiral molecules using techniques as Vibrational Circular Dichroism (VCD) and Raman Optical Activity (ROA), collectively known as Vibrational Optical Activity (VOA). Importantly no crystallization is required as measurements are performed in solution.



NMR spectroscopy

NMR method development in ¹H NMR, ¹³C APT, 2D COSY, TOCSY, ROESY, NOESY, HSQC, HMBC and combinations thereof. e.g. Solution NMR methods for colloidal quantumdots, Diffusion NMR spectroscopy and hr-MAS NMR, Rapid TOCSY typing of complex carbohydrates.

Atomic and mass spectrometry

Use of several ICP - mass spectrometers (quadrupole-based) equipped with a collision/reaction cells, octopole collision/reaction cell and providing double mass selection, ICP-MS unit permitting the entire elemental mass spectrum to be monitored simultaneously and a multi-collector ICP - mass spectrometer as a dedicated tool for high-precision isotopic analysis. Possibilities of coupling ICP-MS with HPLC, GC and CE Isotopic analysis using TIMS and multi collector ICP-MS Solid sampling possible via electro thermal vaporization (ETV) or laser ablation (LA).

