Atmos'Fair 2023

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Intitulé de l'exposé

Développement et validation d'un auto-GC en ligne pour la mesure de OVOC et BVOC à l'état de traces.

Title of the presentation

Development and validation of on-line auto-GC for analysis of trace-level OVCs and BVOCs.

Key-words

Gas Chromatography, Flame Ionization Detection, Volatile Organic Compounds, Ozone precursor, OVOC, BVOC, VOC

Issue

Atmospheric air pollution is one of the most serious environmental issues with major effect on air quality, climate, and health. Volatile Organic Compounds and semi-Volatile (SVOCs and VOCs) are particularly important atmospheric gaseous pollutants, which are released into the atmosphere from both anthropogenic natural and sources. . Biogenic volatile organic compounds (BVOCs) and Oxygenated Volatile Organic Compounds (OVOCs) have an important contribution to the total VOC emissions. Aldehydes and Ketones are generally measured following the ISO 16000-3 method where DNPH cartridges are used to preconcentrate the sample. The method is very sensitive and allows identification and quantification from low ppt to high ppb depending on flow and sampling time. Nevertheless, this technique is time consuming as the sample the must be manually eluted from DNPH cartridge before analysis with HPLC-UV. Other techniques allow specific quantification of specific OVOCs such as formaldehyde but cannot quantify at the same time other VOCs such as terpenes. As a result, automated and continuous measurement of Aldehydes, Ketones and Alcohols, as well as VOCs and BVOCs, is required. The goal of this work is to study the performance and limitation of automatic and continuous identification and quantification of OVOCs and BVOCs using an industrial dual Thermal-Desorber Gas Chromatograph equipped with two Flame Ionization Detectors (FIDs) and one Mass Spectrometer (MS). Specific software and algorithms were used to identify automatically coeluted compounds and select results from FID or MS. In addition, we will present results from a specific module for measuring light OVOCs.