

Special Issue

State of the Art and Challenges in the Analysis of Volatile Organic Compounds

Message from the Guest Editors

The analysis of Volatile Organic Compounds (VOCs) is pivotal in numerous fields. Without claiming to be exhaustive, we can mention perfumery and cosmetics, air quality control, odour assessment, volatolomics, renewable energy with biogazes or non-fossile fuels, food quality, and non-invasive medical diagnostics. Key techniques include one-dimensional (GC) and two-dimensional gas chromatography (GCxGC), often coupled with mass spectrometry (MS). Sampling and injection methods are critical for accurate VOC analysis. Liquid injection, headspace techniques, and solid-phase micro-extraction (SPME) and its variants are commonly employed to capture these compounds. High-resolution mass spectrometry (HRMS) offers additional insights in identifying and quantifying VOCs. The data analysis and visualisation of results for complex sets are integral parts of VOC analysis, where chemometric tools are used to process and interpret the complex data generated. These tools facilitate pattern recognition and component identification, leading to the improved discrimination of complex samples and the potential identification of specific markers.

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