

November 4, 2026 (14:45-15:30)



VENDOR SEMINAR:

Think Big. Make it Small.

Several decades of gas chromatography getting faster, smaller, more reliable and more sensitive

Prof. Erich Leitner, TU Graz

Gas chromatography (GC) has undergone remarkable evolution over the past several decades, driven by continuous innovations in instrumentation, column technology, detectors, and data processing. This presentation highlights the key developments that have transformed GC into a faster, smaller, more reliable, and increasingly sensitive analytical technique. From the introduction of capillary columns and microfabricated systems to advances in detector performance, automation, and portable instrumentation, GC has expanded its capabilities across environmental, industrial, food, forensic, and life science applications. The talk will provide an overview of the technological milestones that have shaped modern GC and discuss emerging trends that continue to push the boundaries of analytical performance, accessibility and an outlook into the future.

Applied miniaturization in industrial applications

Prof. Hans-Gerd Jannsen, Wageningen University & Research, Unilever

Miniaturisation is more than just an appealing buzzword; it has become an essential requirement in many laboratory workflows, including in high-throughput experimentation, rapid sample preparation, and fast LC or GC analysis. In liquid chromatography, miniaturisation reduces solvent consumption, while miniaturised extraction techniques offer the additional benefit of limiting analyst exposure to organic solvents. High-throughput analysis using 96-well plates further enables large numbers of experiments to be performed fully automated.

The above principles will be illustrated with a series of industrially relevant examples. Micro solvent-extraction methods are combined with large-volume injection in GC for the analysis of chlorinated compounds in water. Fast, miniaturised LC is used to screen large numbers of LC fractions for compounds that inhibit enzymes involved in edible-oil transesterification. Fast GC supports high-throughput screening of detergent formulations for their ability to remove food stains from cloth, using a 96-well plate format as a practical alternative to a washing machine. The same 96-well format is also applied to identify natural antioxidants in maize oil. Finally, headspace solid-phase microextraction is shown to be an excellent alternative to solvent extraction in GC-MS flavour analysis.