GC Fundamentals

For the less experienced chromatographer or those wishing to update their skills, this course covers the fundamentally important concepts in modern GC analysis.

Basics of the chromatographic process, sample preparation, inlet systems, column and detector selection are important topics covered to give the participant a thorough grounding in the technique. Instrument hardware is also covered with basic troubleshooting and maintenance tips as well as an introduction to chromatographic optimisation.

Course Contents

Basics of the Chromatographic Process
- Retention mechanisms in GC
- Temperature/retention relationships
- Column theory
- Stationary phase chemistries

Sample Preparation Protocols
- Principles
- Matrix elimination
- Solvent considerations
- Liquid and Solid Phase Extraction

Sample Introduction
- Operating principles
- Typical operating conditions
- Optimisation
- Split / splitless
- Cool on-column
- Headspace (on request)

Columns and Temperature programming
- Choosing the right phase
- Column geometries explained
- Phase types
- Temperature effects
- Band Broadening (van Deemter & Golay treatment)
- Isothermal vs. gradient operation

Detectors
- Choosing the right detector
- Operating principles and Optimisation
- Typical operating conditions
- FID / ECD / GC-MSe

Measuring & Optimising Chromatographic Parameters
- Efficiency
- Capacity factor
- Selectivity
- Resolution
- Interdependence via the resolution equation

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