

GPC-SEC Theory and Praxis (P/N 899-0022)

Description

This training course provides theory lectures and practical sessions for modern analysis of macromolecules using gel permeation chromatography (GPC), also known as size exclusion chromatography (SEC). It covers the theoretical background of the separation technique, gives practical advice for reproducible and accurate analysis, and shows the application advantages as well as the limitations of GPC/SEC and GPC/SEC hyphenation with light scattering, viscometry and other techniques. In the praxis sessions small workgroups (maximum 5 people) verify a GPC/SEC system, check the performance of the separation column, calibrate, and evaluate samples using different techniques. Each group has its own tutor, an experienced polymer chemist, to discuss also special applications and questions.

After successful participation each attendee should be able to obtain results from analysis data, to qualify the condition of the analytical system and the separation columns, and to optimize the application conditions and the work flow in the lab.

Program

Monday

- 09.30** **Welcome and General Information**
- 09.45** **Introduction**
Theoretical background polymer synthesis
Theoretical background liquid chromatography
Comparison and differentiation GPC/SEC - HPLC
Analysis aims GPC/SEC
- 10.45** **Coffee break**
- 11.00** **GPC/SEC Basics**
GPC/SEC Separation mechanism
Retention, plate count, resolution, efficiency
Molar mass determination
Molar mass distribution: averages, moments, meaning
- 11.45** **Coffee break**
- 12.00** **Experimental Setup and Parameters**
GPC/SEC instruments and systems
Column selection and method optimization
Increasing accuracy and reproducibility
Influence analytical conditions
- 13.15** **Lunch**
- 14.15** **Practical Session part I**
Setup and qualification of a GPC/SEC system
System check and column selection
Influence experimental conditions
Determination plate count, efficiency and resolution
- ca. 15.30** **Coffee break**

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17.00	End of Practical Session part I
17.00	Snack
18.00	Visit C.A. Kupferberg & Cie., Mainz, Production and tasting sparkling wine (optional)
20.30	Dinner

Tuesday

09.00	GPC/SEC Calibration methods (1) Calibration with molar mass standards Universal Calibration Broad Calibration Integral Calibration
10.00	Coffee break
10.15	GPC/SEC Calibration methods (2) Copolymer calibration options Molar mass determination with viscometer and/or light scattering detection
11.15	Coffee break
11.30	Chromatografic Couplings for the Analysis of Complex Polymer Systems Copolymer analysis with dual detection Characterization using on-line viscosity detection Identification with GPC-FTIR coupling Identification with GPC-FTIR coupling, UV-spectra and/or mass spectrometry 2-dimensional chromatography: Hyphenation of HPLC with GPC/SEC
13.00	Lunch
14.00	Practical Session part II Calibration of the GPC/SEC system Comparison calibration options Analysis unknown samples Optimization Evaluation Trouble shooting
ca. 15.30	Coffee break
ca. 18.00	End of Practical Session and Course

Venue

Novotel Hotel Mainz, Augustusstraße 6, 55131 Mainz

Mainz is approx. 35 km away from Frankfurt Airport and can be reached easily using the public transport system.

Please contact us directly for further assistance.