

9.2.1.6 Special Techniques

Reversed-Phase Chromatography

An elution procedure used in liquid chromatography in which the mobile phase is significantly more polar than the stationary phase, e.g., a microporous silica-based material with chemically bonded alkyl chains.

Note: The term "reverse phase" is an incorrect expression to be avoided.

Normal-Phase Chromatography

An elution procedure in which the stationary phase is more polar than the mobile phase. This term is used in liquid chromatography to emphasize the contrast to reversed-phase chromatography.

Isocratic Analysis

The procedure in which the composition of the mobile phase remains constant during the elution process.

Gradient Elution

The procedure in which the composition of the mobile phase is changed continuously or stepwise during the elution process.

Stepwise Elution

The elution process in which the composition of the mobile phase is changed in steps during a single chromatographic run.

Two-Dimensional Chromatography

A procedure in which parts or all of the separated sample components are subjected to additional separation steps. This can be done e.g., by conducting a particular fraction eluting from the column into another column (system) having different separation characteristics. When combined with additional separation steps, this may be described as *Multi-Dimensional Chromatography*.

In planar chromatography two-dimensional chromatography refers to the chromatographic process in which the components are caused to migrate first in one direction and subsequently in a direction at right angles to the first one; the two elutions are carried out with different eluents.

Isothermal Chromatography

A procedure in which the temperature of the column is kept constant during the separation.

Programmed-Temperature Chromatography (Temperature Programming)

A procedure in which the temperature of the column is changed systematically during a part or the whole of the separation.

Programmed-Flow Chromatography (Flow Programming)

A procedure in which the rate of flow of the mobile phase is changed systematically during a part or the whole of the separation.

Programmed-Pressure Chromatography (Pressure Programming)

A procedure in which the inlet pressure of the mobile phase is changed systematically during a part or whole of the separation.

Reaction Chromatography

A technique in which the identities of the sample components are intentionally changed between sample introduction and detection. The reaction can take place upstream of the column when the chemical identity of the individual components passing through the column differs from that of the original sample, or between the column and the detector when the original sample components are separated in the column but their identity is changed prior to entering the detection device.

Pyrolysis-Gas Chromatography

A version of reaction chromatography in which a sample is thermally decomposed to simpler fragments before entering the column. See Chapter 5.3 Analytical pyrolysis.

Post-Column Derivatization

A version of reaction chromatography in which the separated sample components eluting from the column are derivatized prior to entering the detector. The derivatization process is generally carried out "on-the-fly", i.e., during transfer of the sample components from the column to the detector. Derivatization may also be carried out before the sample enters the column or the planar medium; this is *pre-column (preliminary) derivatization*.