

9.2.1 General Terminology

9.2.1.1 Basic Terms and Definitions

Chromatography

Chromatography is a physical method of separation in which the components to be separated are distributed between two phases, one of which is stationary (*stationary phase*) while the other (the *mobile phase*) moves in a definite direction.

Chromatogram

A graphical or other presentation of detector response, concentration of analyte in the effluent or other quantity used as a measure of effluent concentration versus effluent volume or time. In planar chromatography "chromatogram" may refer to the paper or layer with the separated zones.

Chromatograph (verb)

To separate by chromatography.

Chromatograph (noun)

The assembly of apparatus for carrying out chromatographic separations.

Stationary Phase

The stationary phase is one of the two phases forming a chromatographic system. It may be a solid, a gel or a liquid. If a liquid, it may be distributed on a solid. This solid may or may not contribute to the separation process. The liquid may also be chemically bonded to the solid (*Bonded Phase*) or immobilized onto it (*Immobilized Phase*).

The expression *Chromatographic Bed* or *Sorbent* may be used as a general term to denote any of the different forms in which the stationary phase is used.

Note: Particularly in gas chromatography where the stationary phase is most often a liquid, the term *Liquid Phase* is used for it as compared to the *Gas Phase*, i.e., the mobile phase. However, particularly in the early development of liquid chromatography, the term "liquid phase" had also been used to characterize the mobile phase as compared to the "solid phase" i.e., the stationary phase. Due to this ambiguity, the use of the term "liquid phase" is discouraged. If the physical state of the stationary phase is to be expressed, the use of the adjective forms such as *Liquid Stationary Phase* and *Solid Stationary Phase*, *Bonded Phase* or *Immobilized Phase* is proposed.

Bonded Phase

A stationary phase which is covalently bonded to the support particles or to the inside wall of the column tubing.

Immobilized Phase

A stationary phase which is immobilized on the support particles, or on the inner wall of the column tubing, e.g., by *in situ* polymerization (cross-linking) after coating.

Mobile Phase

A fluid which percolates through or along the stationary bed, in a definite direction. It may be a liquid (*Liquid Chromatography*) or a gas (*Gas Chromatography*) or a supercritical fluid (*Supercritical-Fluid Chromatography*). In gas chromatography the expression *Carrier Gas* may be used for the mobile phase. In elution chromatography the expression *Eluent* is also used for the mobile phase.

Elute (verb)

To chromatograph by elution chromatography. The process of elution may be stopped while all the sample components are still on the chromatographic bed or continued until the components have left the chromatographic bed.

Note: The term "elute" is preferred to the term *Develop* used in former nomenclatures of planar chromatography.

Effluent

The mobile phase leaving the column.

Sample

The mixture consisting of a number of components the separation of which is attempted on the chromatographic bed as they are carried or eluted by the mobile phase.

Sample Components

The chemically pure constituents of the sample. They may be unretained (*i.e.*, not delayed) by the stationary phase, partially retained (*i.e.*, eluted at different times) or retained permanently. The terms *Eluite* or *Analyte* are also acceptable for a sample component.

Solute

A term referring to the sample components in partition chromatography.

Solvent

A term sometimes referring to the liquid stationary phase in partition chromatography.

Note: In liquid chromatography the term "solvent" has been often used for the mobile phase. This usage is not recommended.

Zone

A region in the chromatographic bed where one or more components of the sample are located. The term *Band* may also be used for it.