

Chromatographic techniques

Adsorption, Column, partition, affinity, ion exchange

Size exclusion. GC, GLC, HPLC

The process by which ions, atoms or molecules adhere to the surface of a solid material. (to stick)

Column chromatography

It is a preparative technique used to purify compounds depending on their polarity. In column chromatography, a mixture of molecules is separated based on their differential partitioning between mobile phase & stationary phase.

Partition

Separation of components between two liquid phases i.e. original solvent & film of solvent used in column.

Affinity chromatography → Is a separation method based on a specific binding interaction between an immobilized ligand and its binding partner. Ex: Antibody/antigen, enzyme/substrate

Ion Exchange It is a separation method based on solute molecules with different properties of charges & different amount of charge, reversible exchange between stationary phase

ξ mobile phase.

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Size exclusion

Is a chromatographic method in which molecules in solution are separated by their size ξ in some cases molecular weight. It is usually applied to large molecules

or macromolecular complexes such as proteins ξ industrial

Polymers.

GC

- 1) Sample is introduced into the GC either with a syringe or transferred from autosampler
- 2) The sample is injected into the GC inlet, through septum which enables injection of sample mixture without losing mobile phase.
- 3) Connected to inlet is the analytical column fused silica or metal tube
- 4) Column oven is heated during analysis to elute less volatile components.
- 5) outlet is inserted into detector which responds to chemical components eluting from the column to produce signal.
- 6) Signal is recorded by acquisition software on computer to produce chromatogram.