काशी हिन्दू विश्वविद्यालय BANARAS HINDU UNIVERSITY

AN INSTITUTION OF NATIONAL IMPORTANCE ESTABLISHED BY AN ACT OF PARLIAMENT

Semester VI (CHB-601)

Separation of molecules by chromatographic techniques

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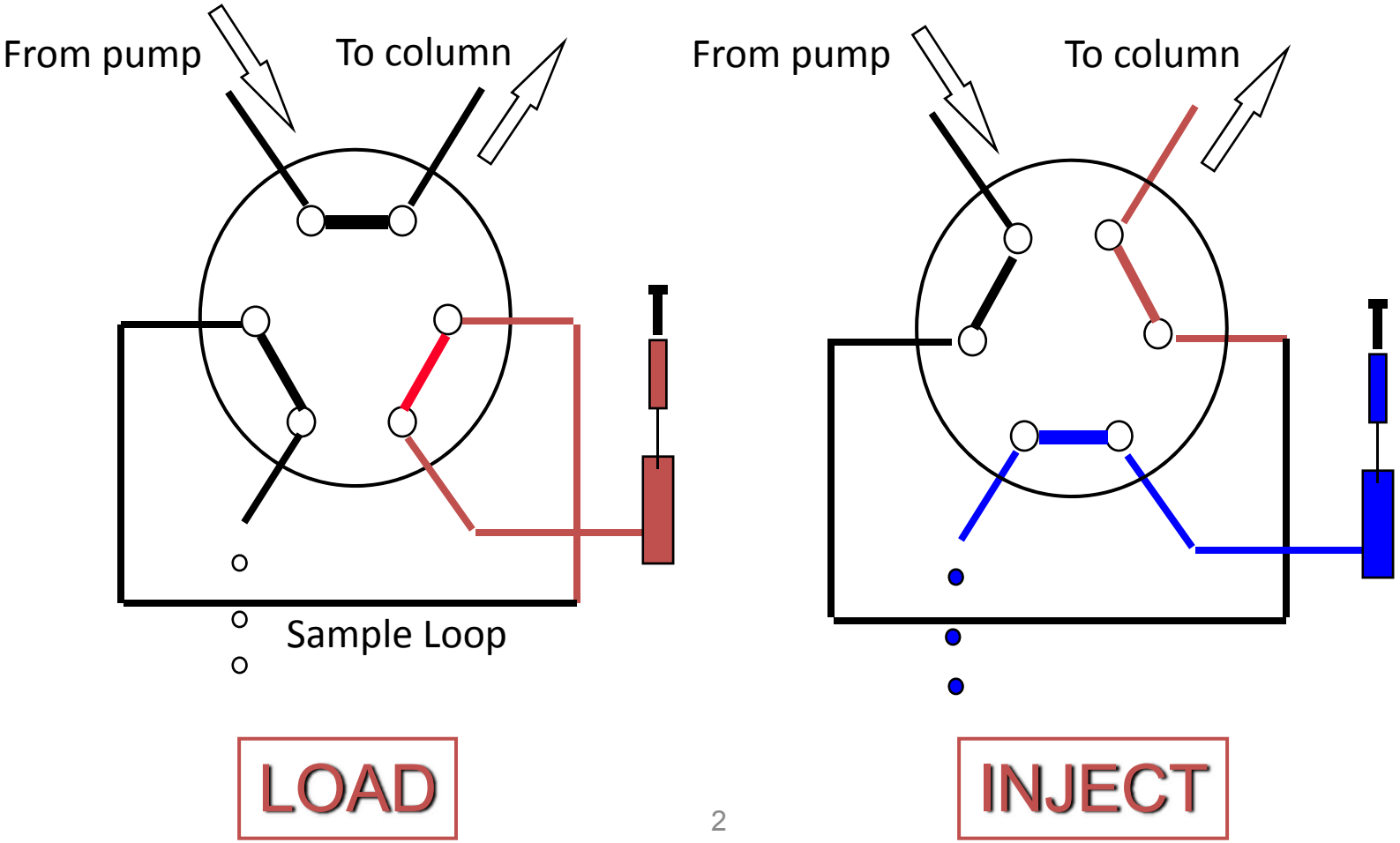
Autosampler
(Pressure Injection Method)



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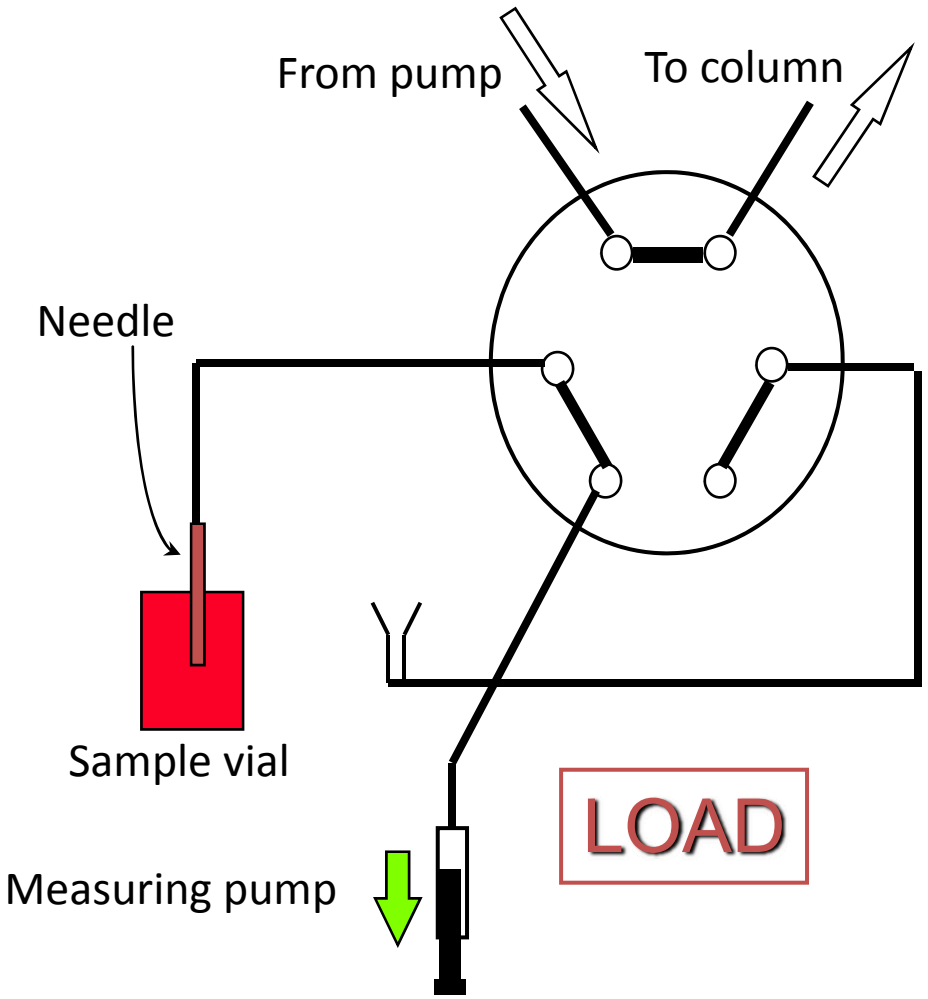
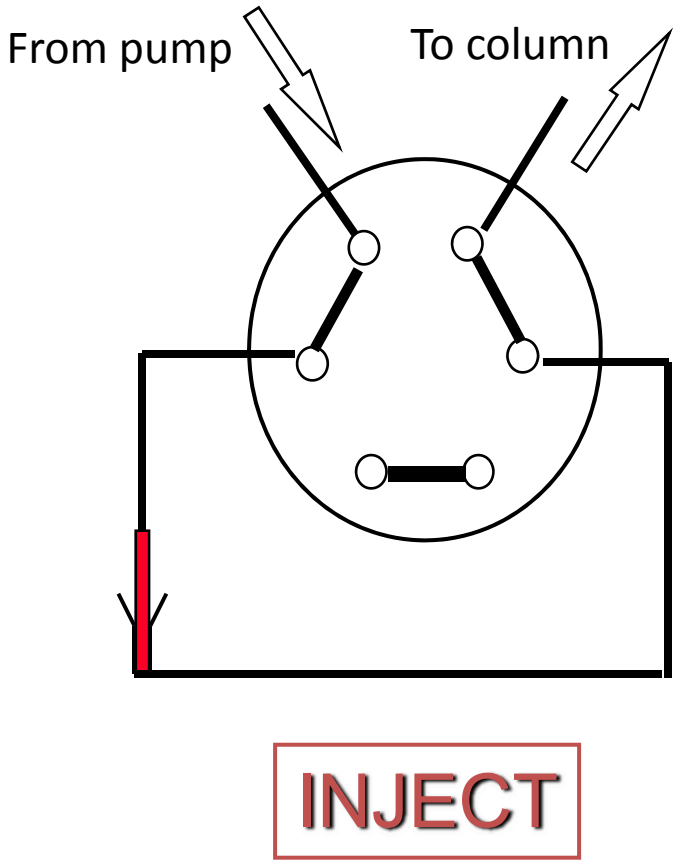
INJECT

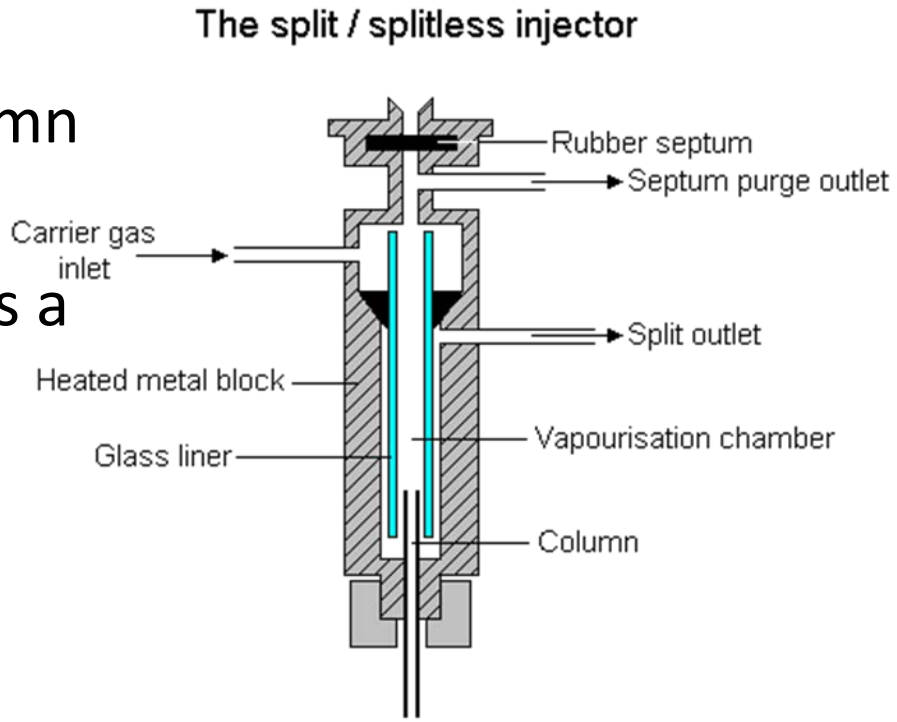
Autosampler
(Total-Volume Injection Method)



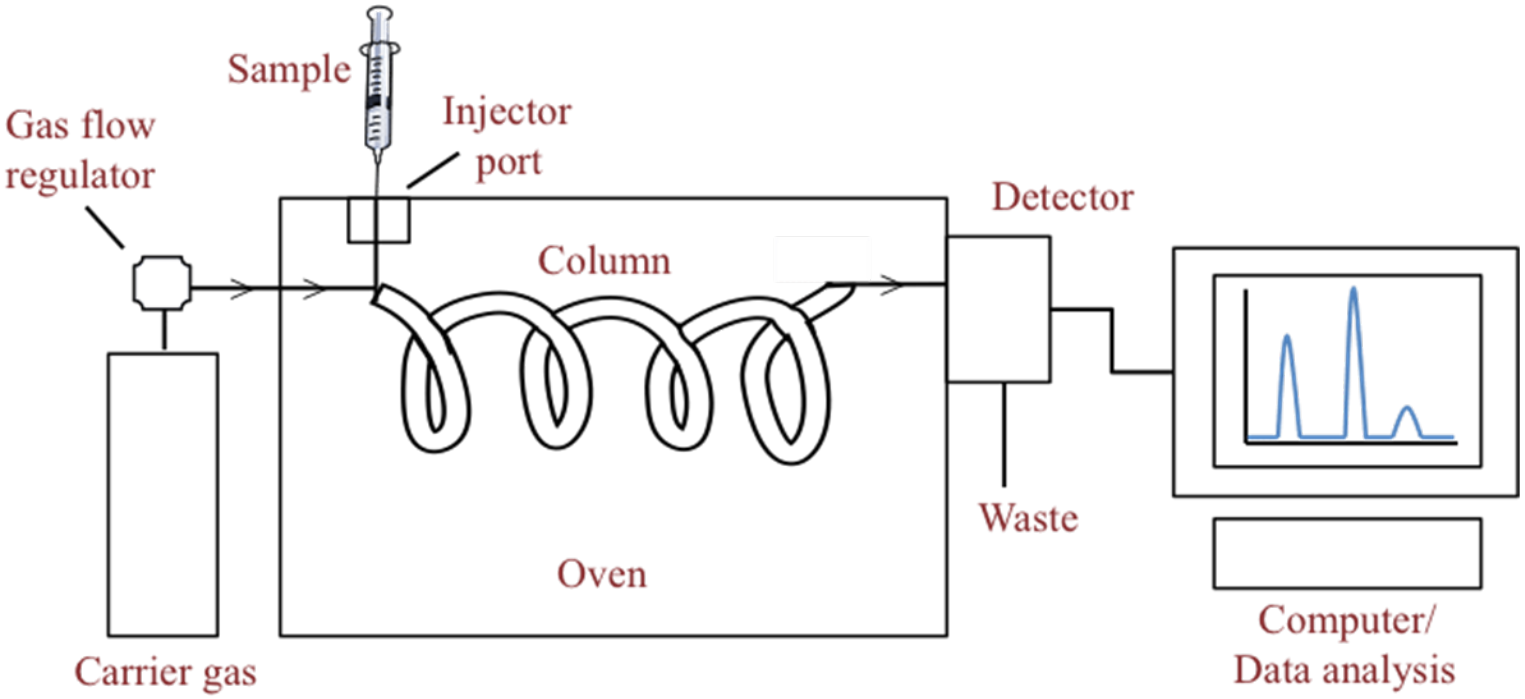


Gas Chromatography

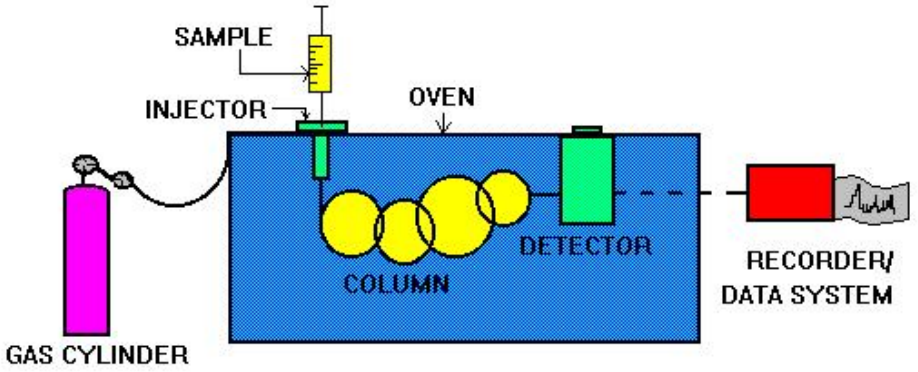
- A vaporized sample is injected onto the chromatographic column
- Sample moves through the column through the flow of inert gas
- The components are recorded as a sequence of peaks as they leave the column
- Moble phase-inert gas used as carrier
- Stationary phase- liquid coated on a solid or solid within a column

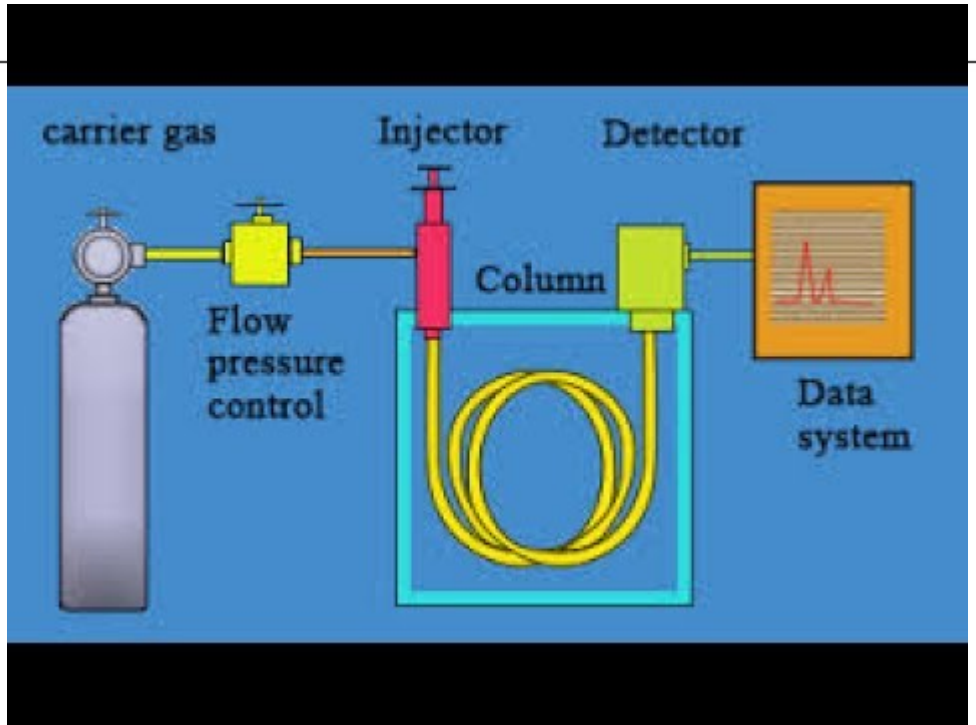


Apparatus outline



GAS CHROMATOGRAPHY





Practical requirements

- Carrier gas
- Flow regulators and flow meters
- Injection devices
- Columns
- Temperature control devices
- Detectors
- Recorders and integrators

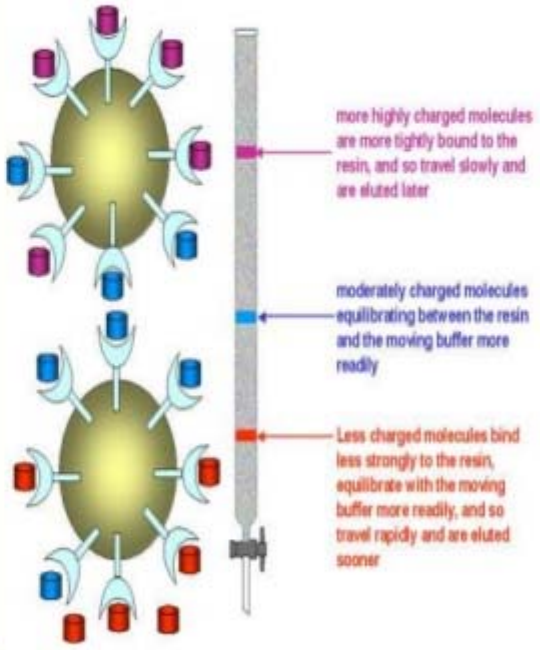
Carrier gas

- Hydrogen
  - Better thermal conductivity
  - Disadvantages
    - Reacts with unsaturated compounds
    - Inflammable
- Helium
  - excellent thermal conductivity
  - Expensive
- Nitrogen
  - Reduced sensitivity
  - inexpensive

Requirements of a carrier gas

- Inertness
- Suitable for detector
- High purity
- Easily available
- Cheap
- Should give best column performance

Ion exchange chromatography

Principle

- Ion exchange chromatography retains analyte molecules based on ionic interactions.
- The stationary phase surface displays ionic functional groups (R-X) that interact with analyte ions of opposite charge.