

Unit III Chromatography – 3

- (a) *Gas chromatography*: Theory, Instrument description of equipment and different parts, columns (packed and capillary columns), detector specifications-thermal conductivity detector, flame ionization detector, electron capture detector, nitrogen-phosphorus detector, photo ionization detector, programmed temperature gas chromatography, applications in the analysis of gases, petroleum products etc., other detectors used their Principles and Applications.
- (b) *Inorganic molecular sieves*: structure of zeolites, crystals, types of sieves, application in the separation of gases including hydrocarbons, ion exclusion-principles and applications, Counter current chromatography-principles and application, Affinity chromatography-principles and applications
- (c) *GC-MS – Introduction*
Instrumentation – GC – MS interface – Mass spectro meter (MS)
Instrument operation, processing GC – MS data – ion chromatogram
Library searching – Quantitative measurement – sample preparation
Selected ion monitoring – Application of GC-MS for Trace constituents.
Drugs analysis, Environmental analysis and others.

Unit IV Chromatography – 4

- (a) *Liquid-liquid partition chromatography*: principle, supports, partitioning liquids, eluents, reverse phase chromatography, apparatus, applications
- (b) *High performance liquid chromatography*: Theory, Instrument description of the different parts of the equipment, columns, detectors-UV detector, refractometric detector, Fluorescence detector, Diode Array detector, applications in the separation of organic compounds, names of other detectors used their Principles and Applications.
- (c) *LC-MS – Introduction – Instrumentation – liquid chromatograph – Mass spectrometer*
Interface – Instrumental details – Processing LC-MS data – ion chromatograms –
Library searching – Quantitative measurements.
Sample preparation – selected ion monitoring. Application of LC-MS for Drug analysis, Environmental samples and others.

Text books:

1. R.P.W Scott, Techniques and practice of Chromatography, Marel Dekker Inc., New York
2. Separation methods, M.N Sastri, Himalaya Publishing Company, Mumbai

Reference books:

1. E. Helfman, Chromatography, Van Nostrand, Reinhold, New York
2. E. Lederer and M. Lederer, Chromatography, Elsevier, Amsterdam.
3. Chemical separation methods, John A Dean, Von Nostrand Reinhold, New York
4. R.P.W Scott, Techniques and practice of Chromatography, Marel Dekker Inc., New York
5. H.M Mc Nair and J.M. Miller, Basic Gas Chromatography, John Wiley, New York
6. W. Jeumings, Analytical Gas chromatography, Academic Press, New York
7. H. Eugelhardt (ed), Practice of HPLC, Springer Verrag, Berrin