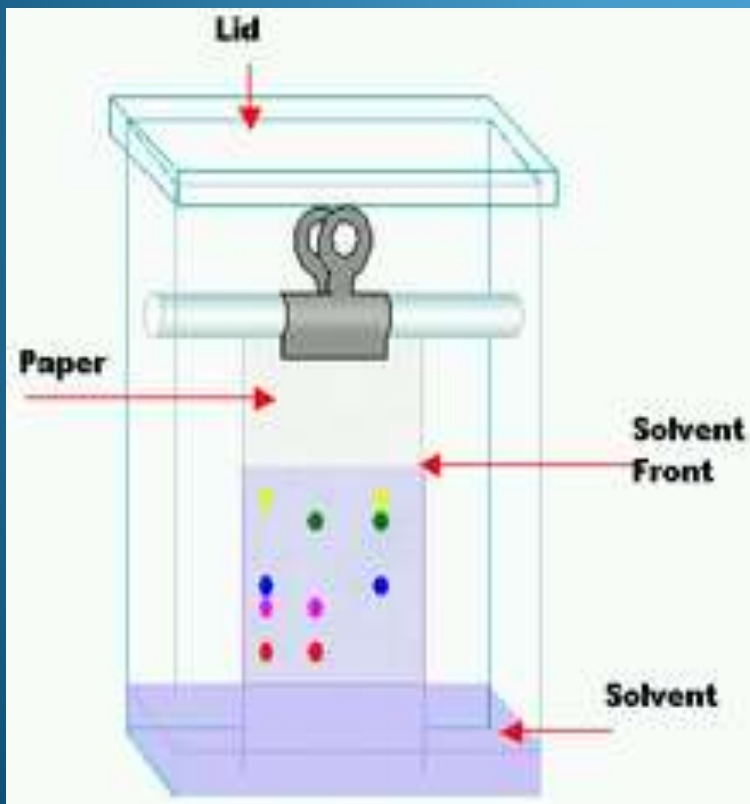


PAPER CHROMATOGRAPHY



PRACHEE RAJPUT

SYNOPSIS

- Introduction
- Historical Development
- Types of chromatography
- Technique of chromatography
- Paper chromatography
- Principle
- Types of paper chromatography
- Instrumentation
- Methodology
- Modes of paper chromatography
- Applications
- Recent research
- References

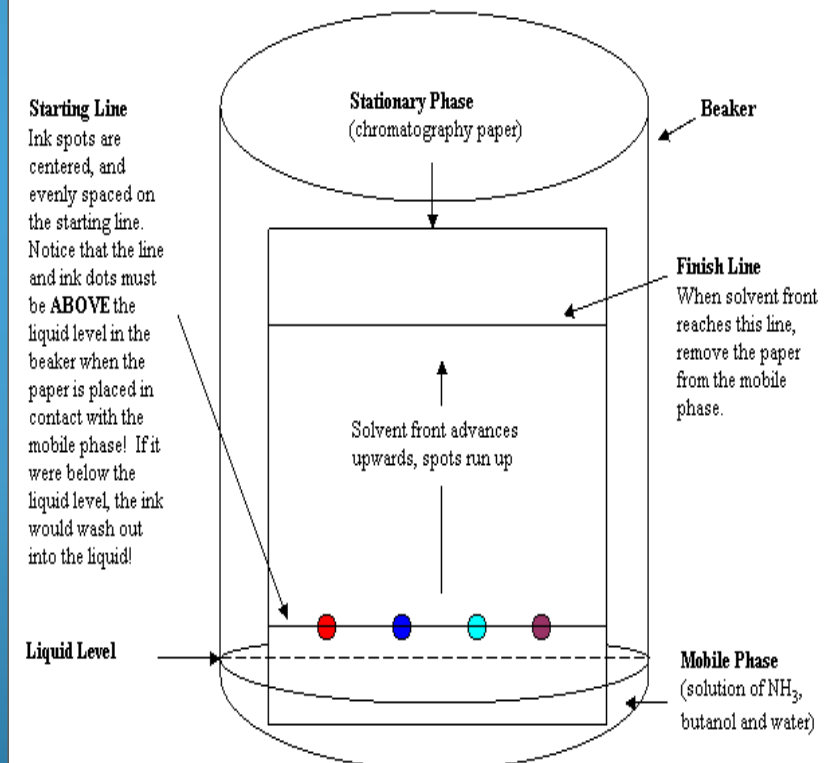
INTRODUCTION

Chromatography is defined as a procedure by which solutes are separated by dynamic differential migration process in a system consisting of two or more phase one of which moves continuously in a given direction

Two phase are

- Stationary phase
- Mobile phase

Figure 1: Beaker with stationary and mobile phases.



HISTORICAL DEVELOPEMENT

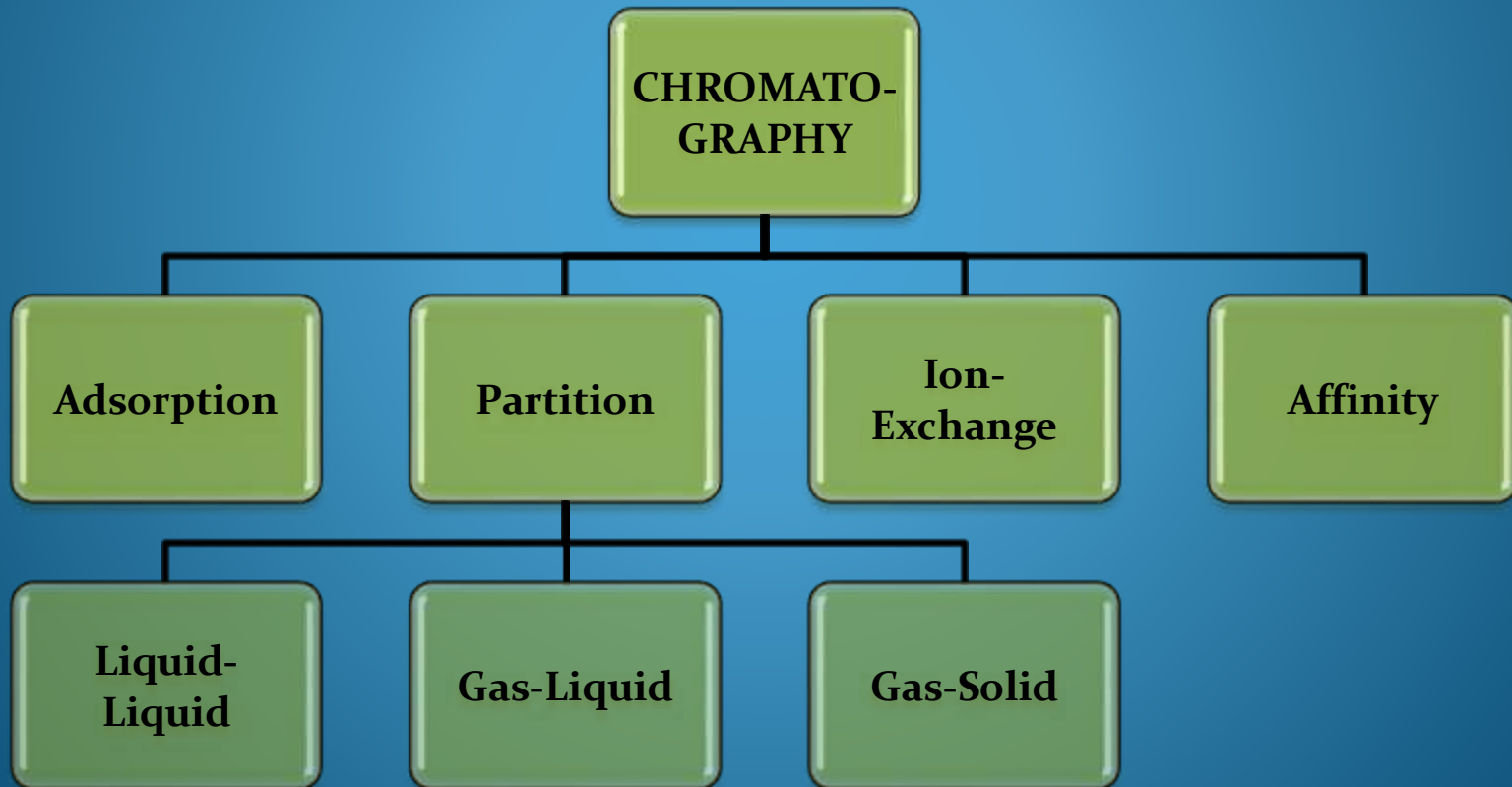
- In 1906 chromatography was first discovered by M. TSWETT.
- In 1942 partition chromatography was developed by MARTIN AND SYNG.
- In 1961 paper chromatography was discovered by SEHON BEIN.



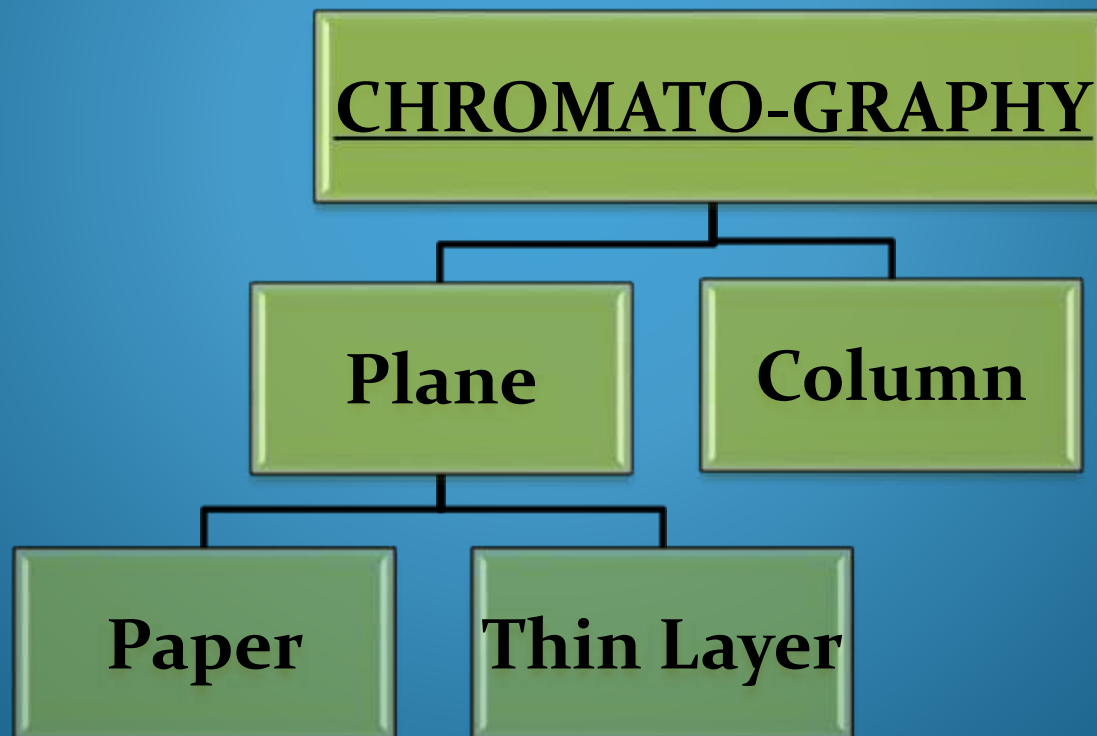
[<http://www.cristinalegido.quyley.co.uk>]

[<http://www.amrita.valab.com.in>]

TYPES OF CHROMATOGRAPHY



TECHNIQUES OF CHROMATOGRAPHY



PAPER CHROMATOGRAPHY

- Paper chromatography is defined as technique in which the analysis of unknown substance is carried out mainly by the flow of solvents on specially designed filter paper .
- In 1961 paper chromatography was first discovered by SEHON BEN.

WHATMAN FILTER PAPER



PRINCIPLE

The principal of separation is mainly partition rather than absorption cellulose layers in filter paper contains moisture which acts as stationary phase. organic solvents or buffers are used as mobile phases. instead of water as stationary phase other organic solvents can be used by suitable modification.

CONT...

- They are two types of paper chromatography,
- Paper adsorption chromatography.
- Paper partition chromatography.

INSTRUMENTATION



METHODOLOGY

- Obtain a chromatogram jar, a piece of fresh spinach, and a length of chromatography paper.



- Cut the tip of the paper such that it forms a point of a triangle.



- Draw a line across the paper 1cm up from the triangle this is start line.



- Using a capillary tube transfer a drop of the green pigment solution to the center of start line.

CONT...

- Pour approx 1cm of chromatography solvent in to the chromatography.



- Open chromatography jar and hang the papers in the jar so the tip of the triangle dips into the solvent



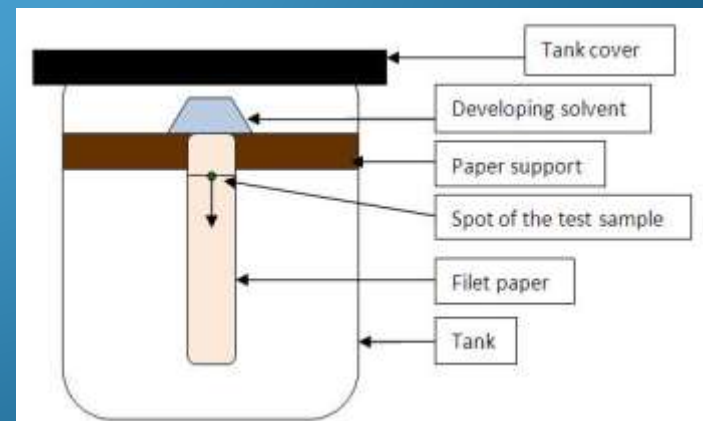
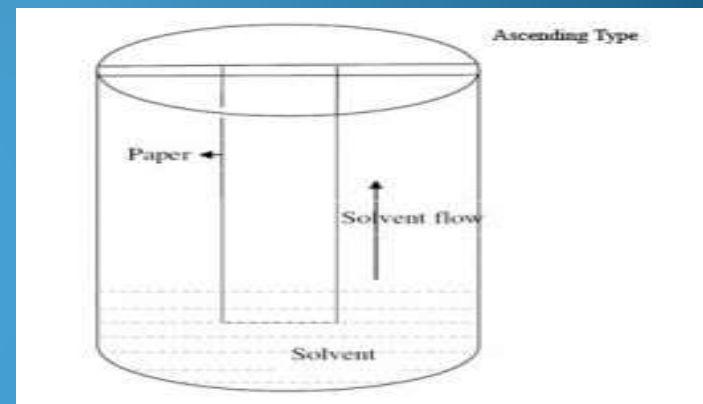
- Allow the solvent to rise for about 15 minutes or until the solvent line near the top of paper.



- When the solvent line is about 1cm from the top of paper.

MODES OF PAPER CHROMATOGRAPHY

- Ascending chromatography
- Descending chromatography

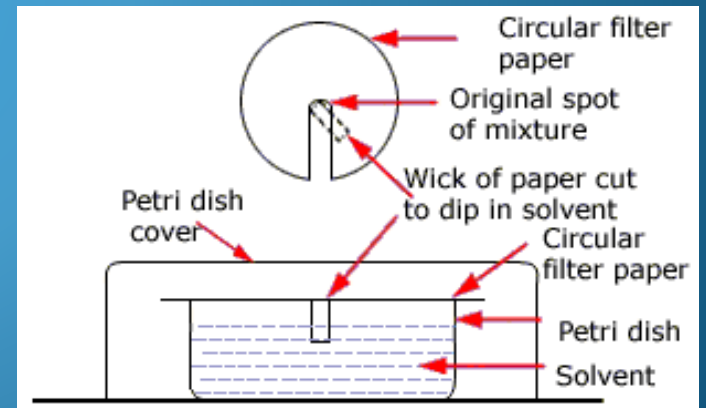


[VIDYA SA GAR 2009]

[<http://www.amrita.valab.com.in>]

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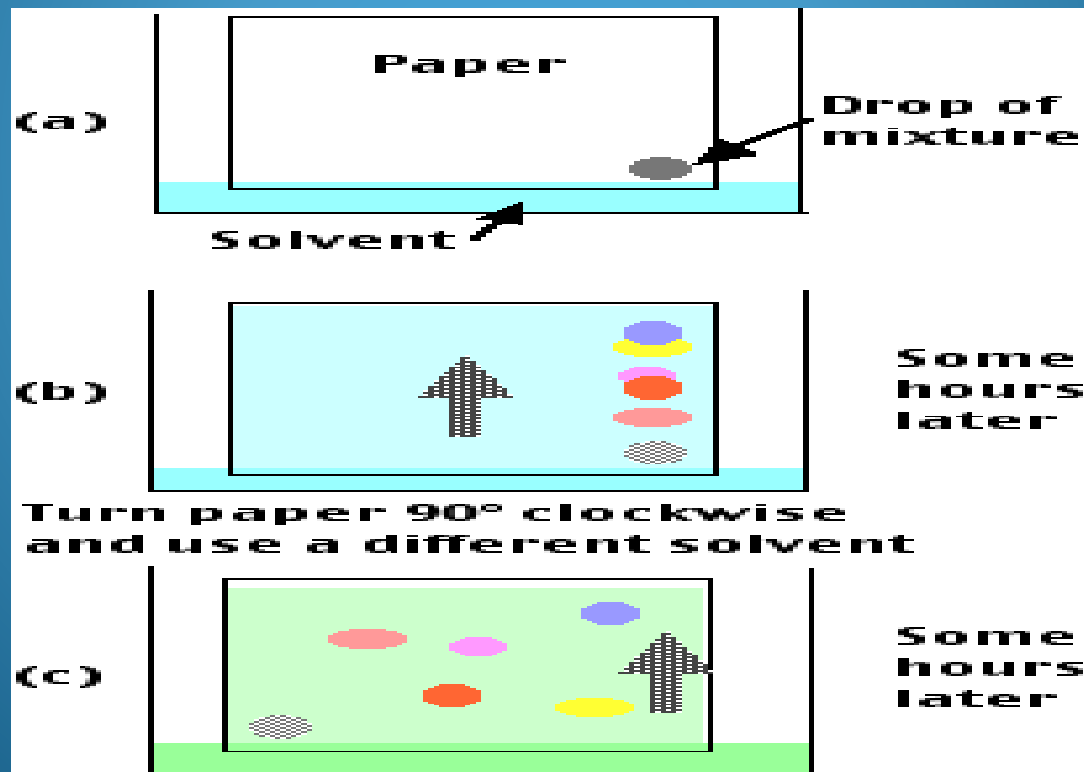
- Circular/radial chromatography (Horizontal)



[VIDYA SA GAR 2009]

CONT...

Two dimensional chromatography



Quantitative Analysis

- They are two technique use.....
- Direct technique
- Indirect technique
- Qualitative Analysis

- They are three value.....
- Rf Value

- Rf Value = $\frac{\text{Distance travelled by solute}}{\text{Distance travelled by solvent}}$

APPLICATIONS

- Paper chromatography is specially used for separation of mixture having polar and non polar compounds.
- For separation of amino acids.
- It is used to determine organic compound biochemical in urine etc.
- Some time used for evolution of inorganic compound like salt and complex.

RECENT RESEARCH

- Denis. V, Bochko V, Sergey. V, Sysolyatin Alexander. I, Kalashnikov, Irina. A, Surmacheva.
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- Wilson.K, Walker M.J,1994, Electrophoretic techniques In: Principles and Techniques of Biochemistry,7th Edition, Combridge University Press, pp.425-442 .
- Vidya Sagar .G ,2009, Instrumental Methods Of Drug Analysis. (Introduction And Paper Chromatography),. By Publisher Pharma Med Press PP :69-71.
- Upadhyia.A,Upadhyia.K, Nath.N,2007,Biophysical Chemistry(Principle and Technique),4th Edition, Himalaya Publishing House ,PP.34.

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- [<http://www.trinity.edu/mbushey/chemart>]

Thank you ...

