

SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

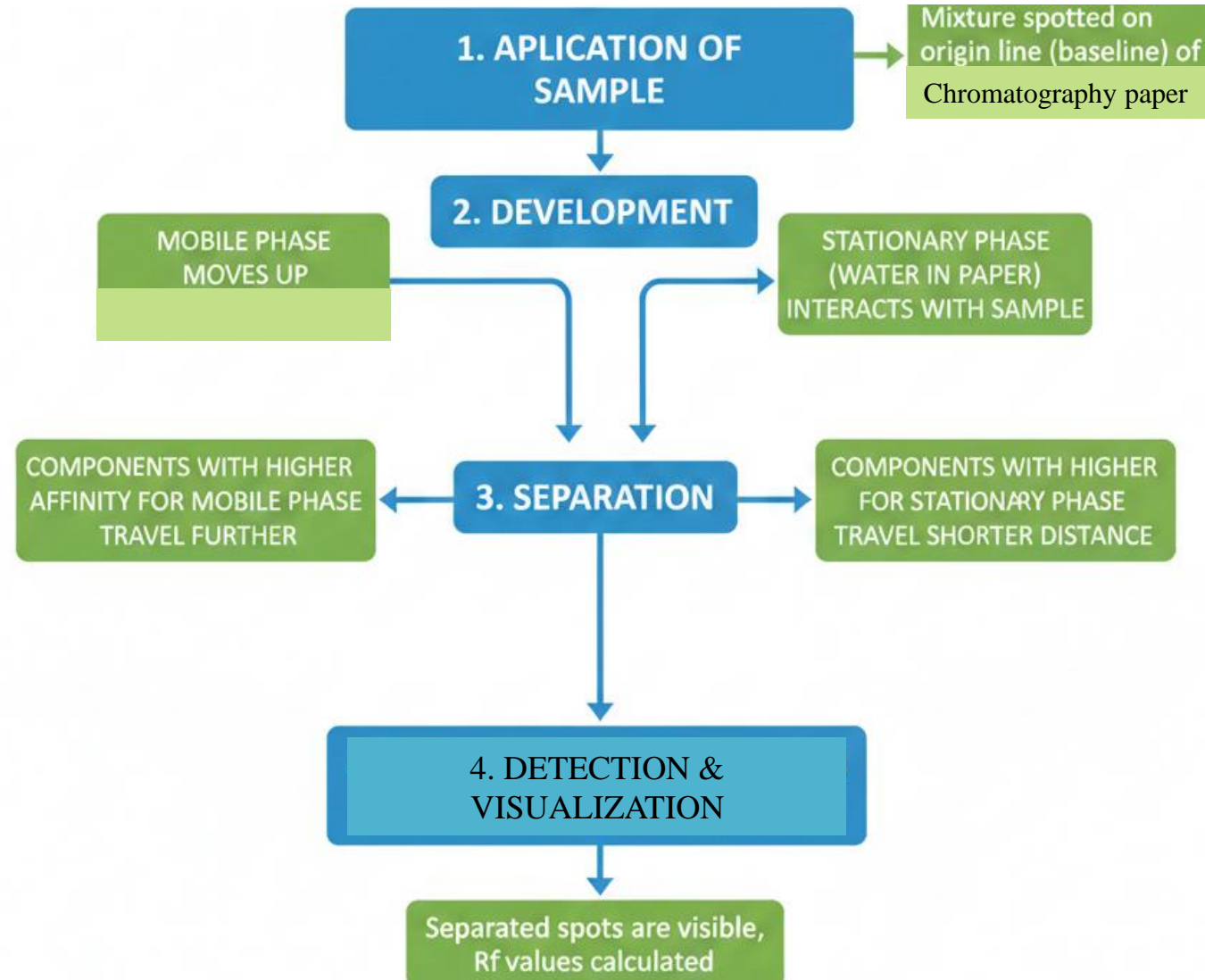
Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Approved by Pharmacy Council of India, New Delhi.
Coimbatore -641035

COURSE NAME: INSTRUMENTAL METHODS OF ANALYSIS (BP 701 T)

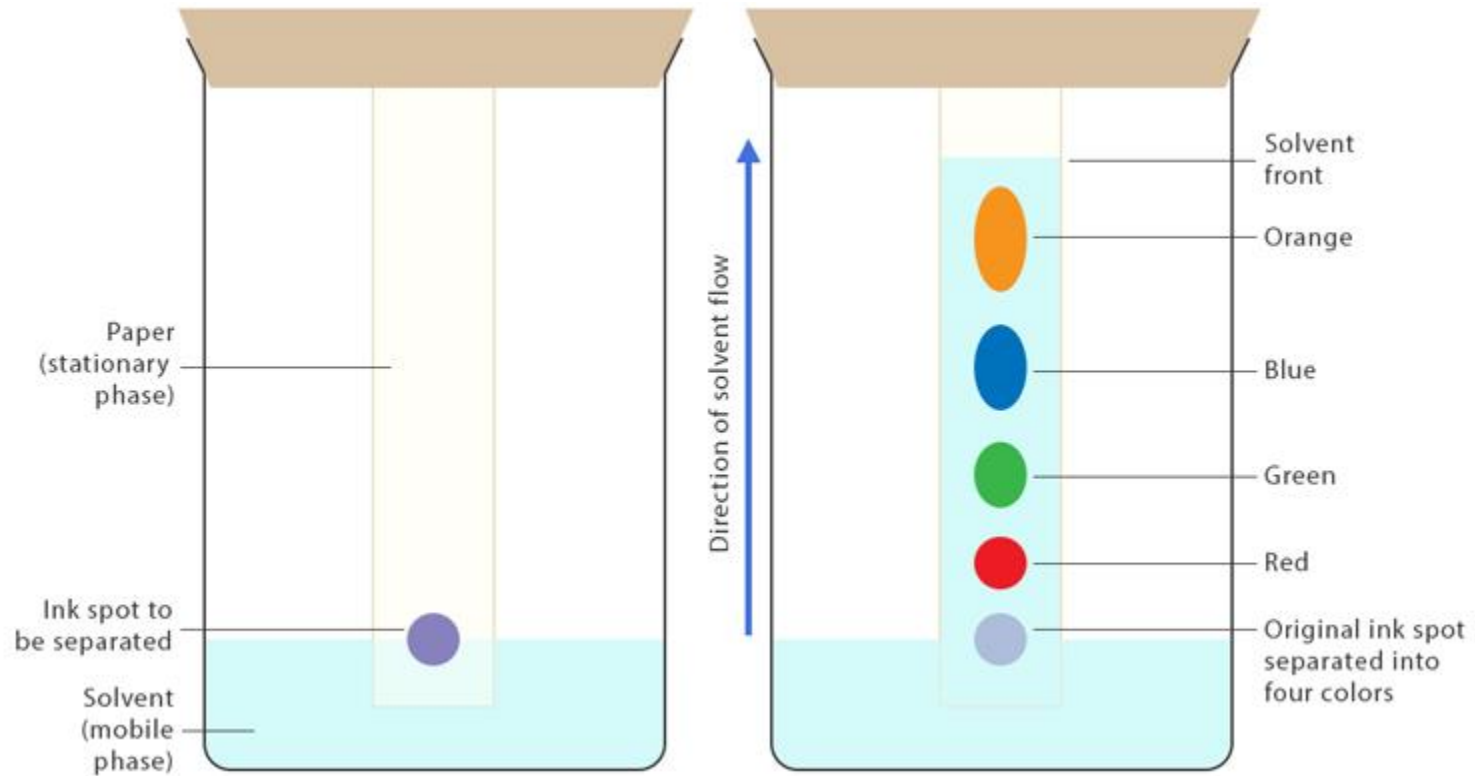
VII SEM/ IV YEAR

TOPIC 26: PAPER CHROMATOGRAPHY- METHODOLOGY

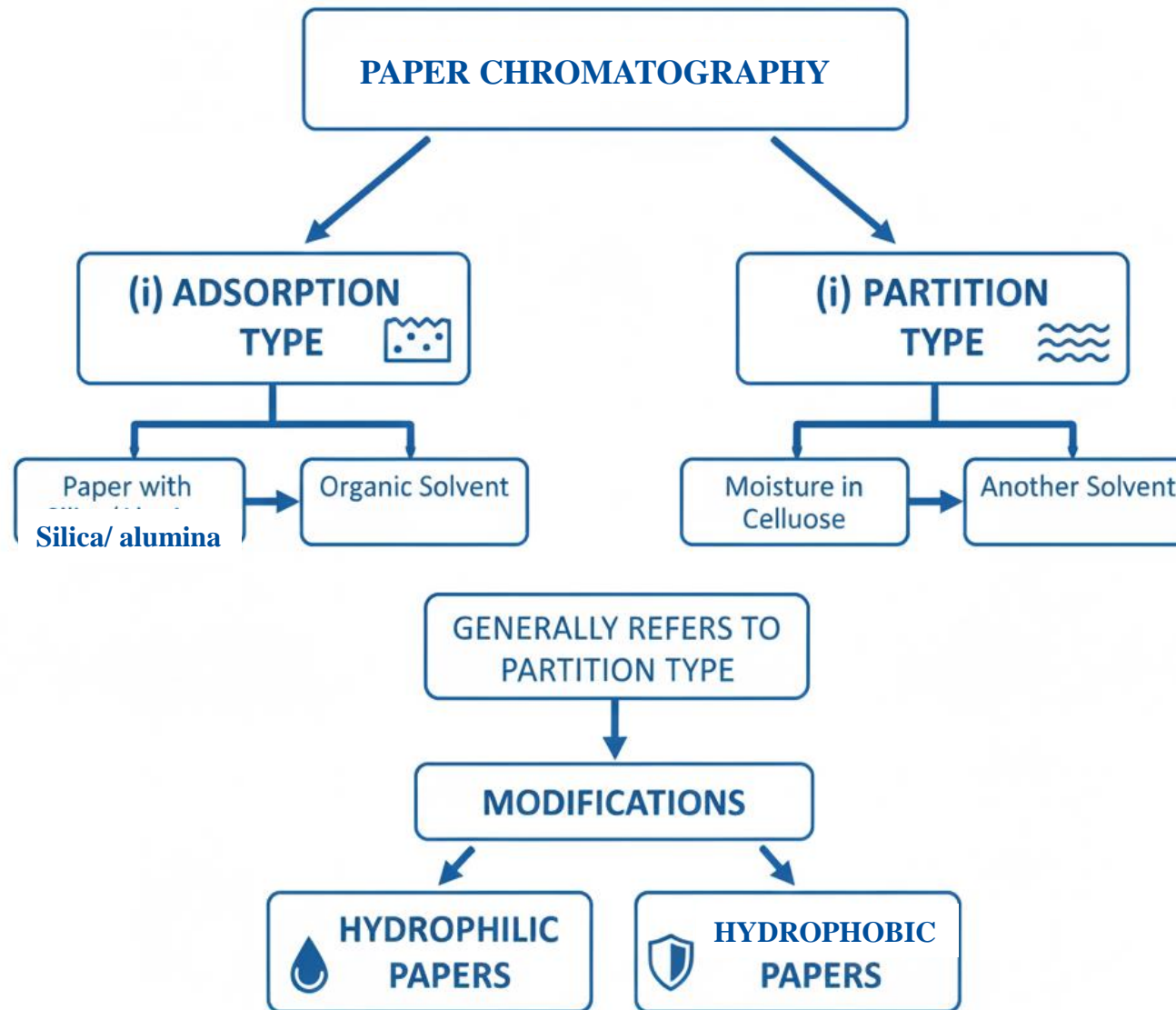
MINDMAP:



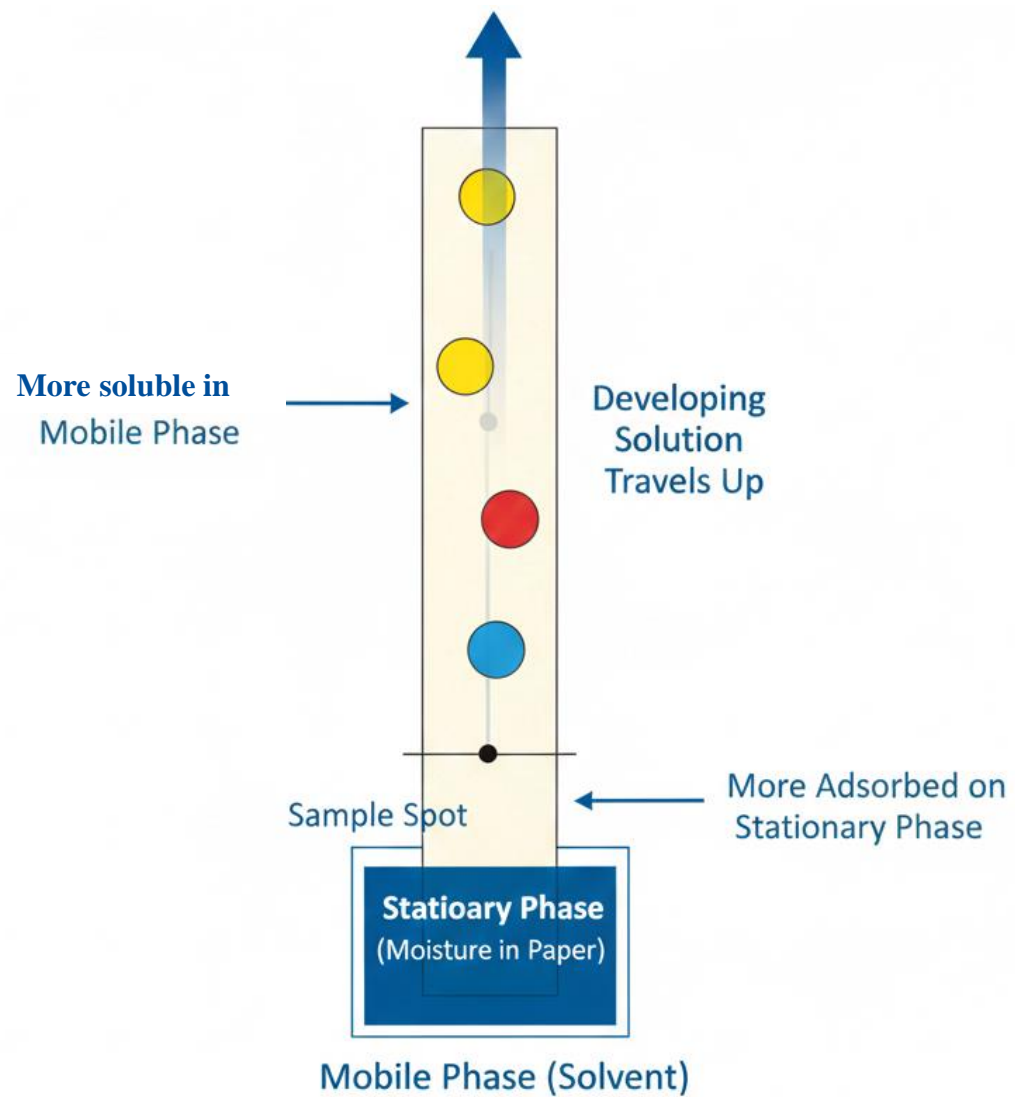
Paper Chromatography



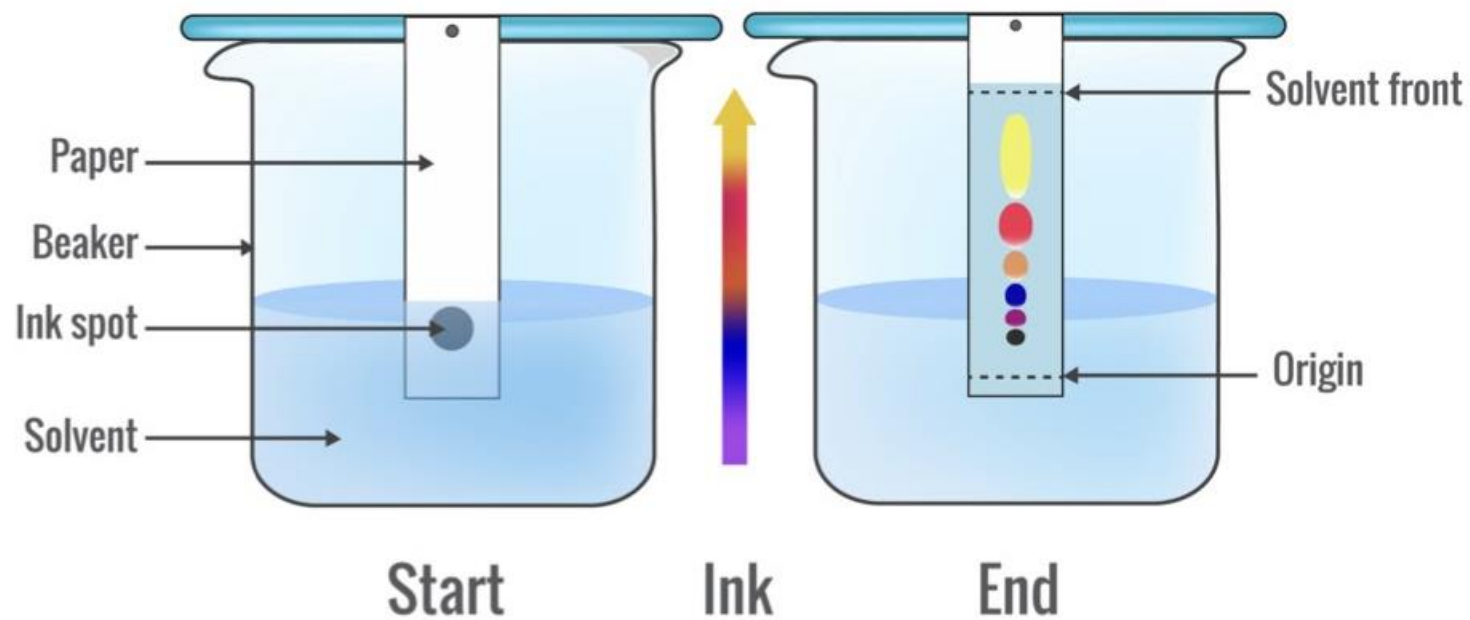
Types of Paper Chromatography



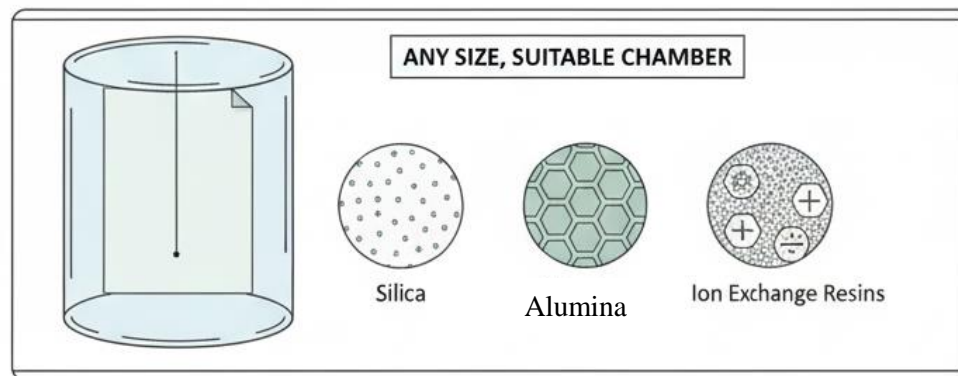
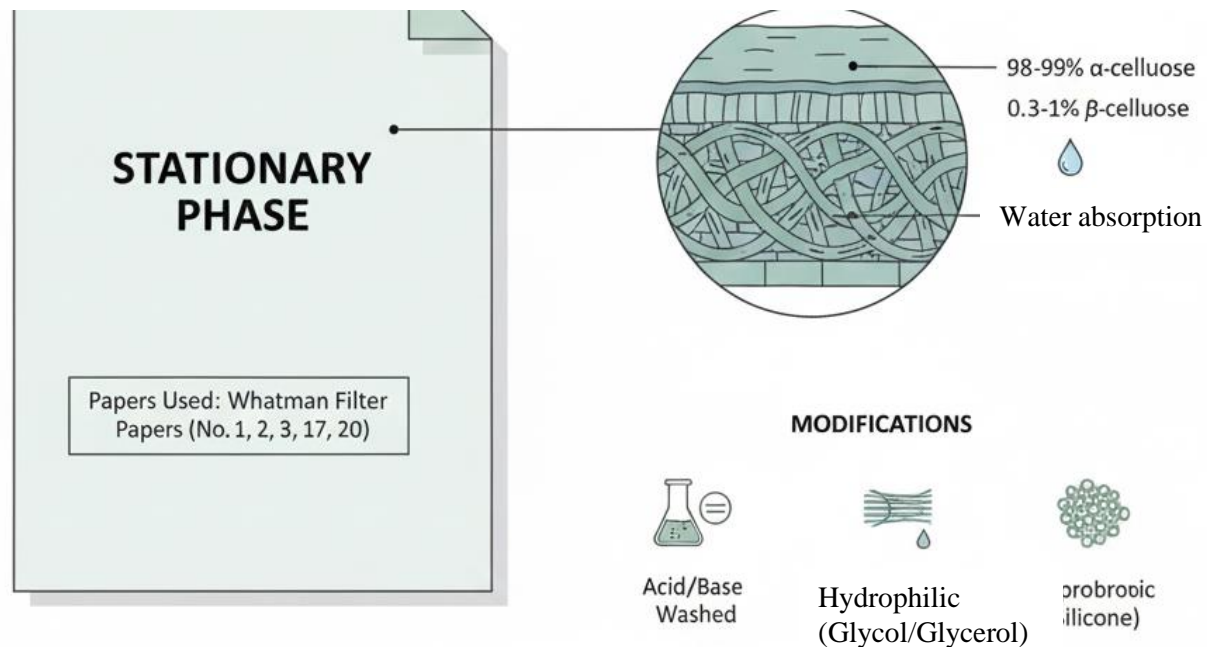
Principle of Separation



Separation process



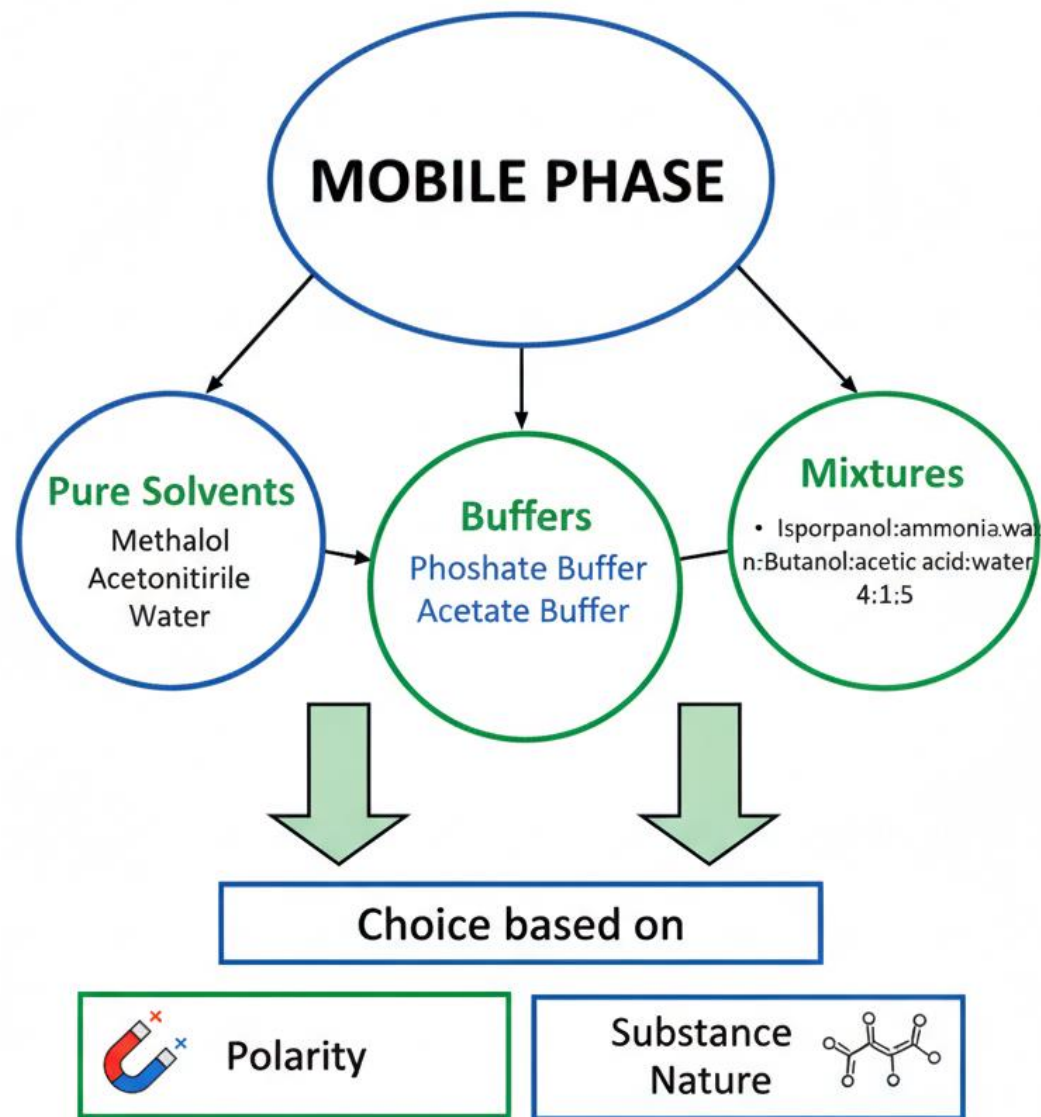
Stationary Phase



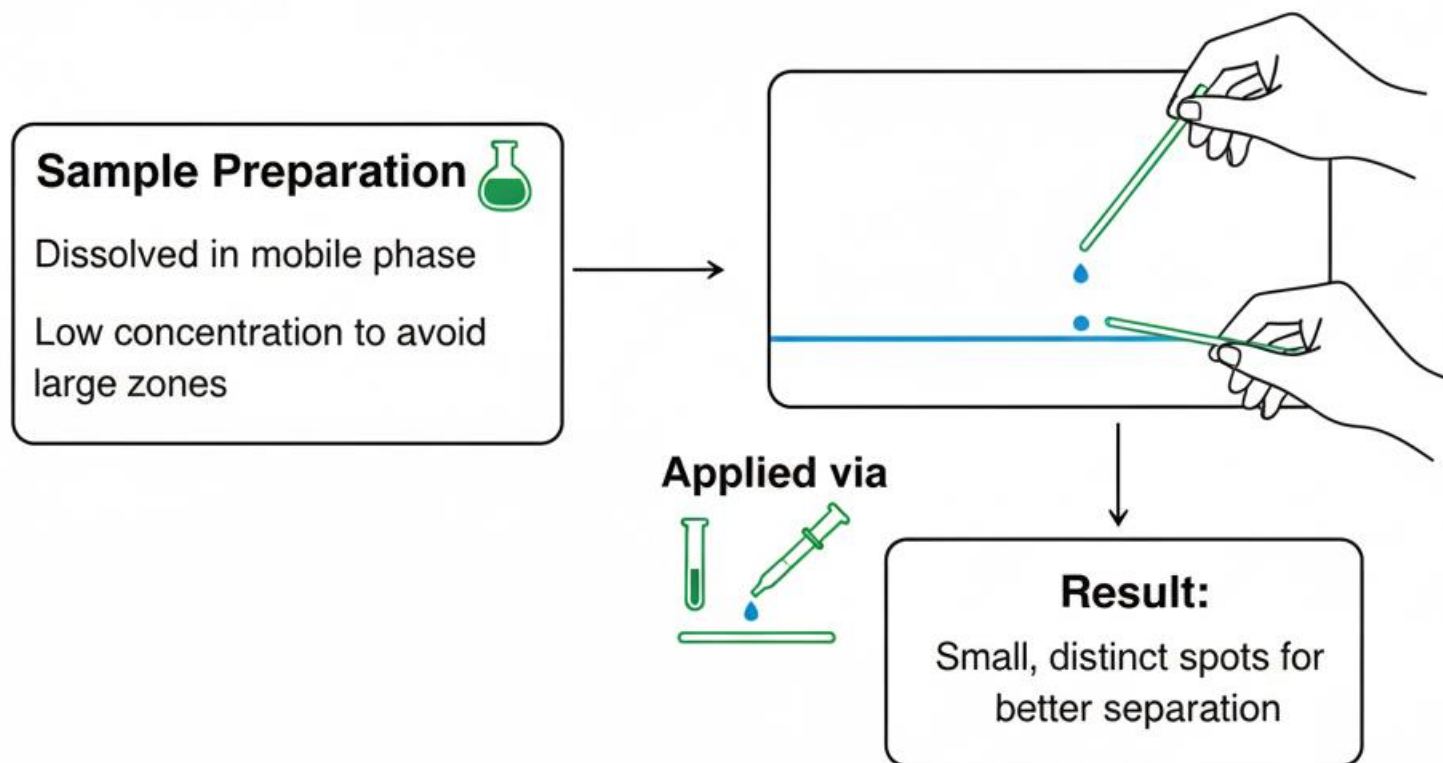
Stationary Phase

Category	Details
Stationary Phase	Papers Used: Whatman filter papers (e.g., No.1, No.2, No.3, No.17, No.20)
Composition	98-99% α -cellulose, 0.3-1% β -cellulose
Modifications	Acid/base washed, glass fiber, hydrophilic (glycol, glycerol), hydrophobic (silicone)
Size	Any size, kept in suitable chamber; impregnation with silica/alumina/ion exchange resins possible

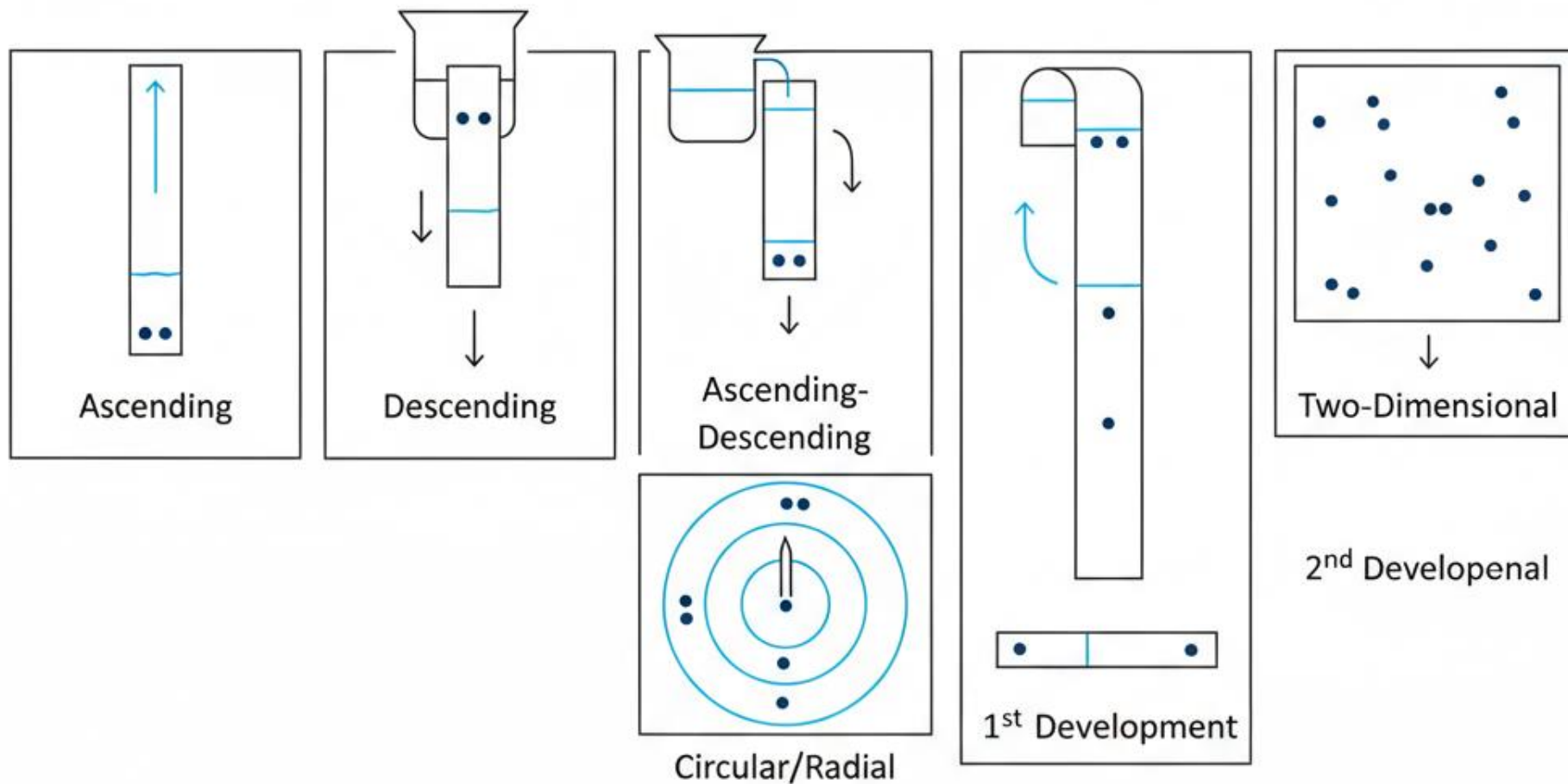
Mobile Phase



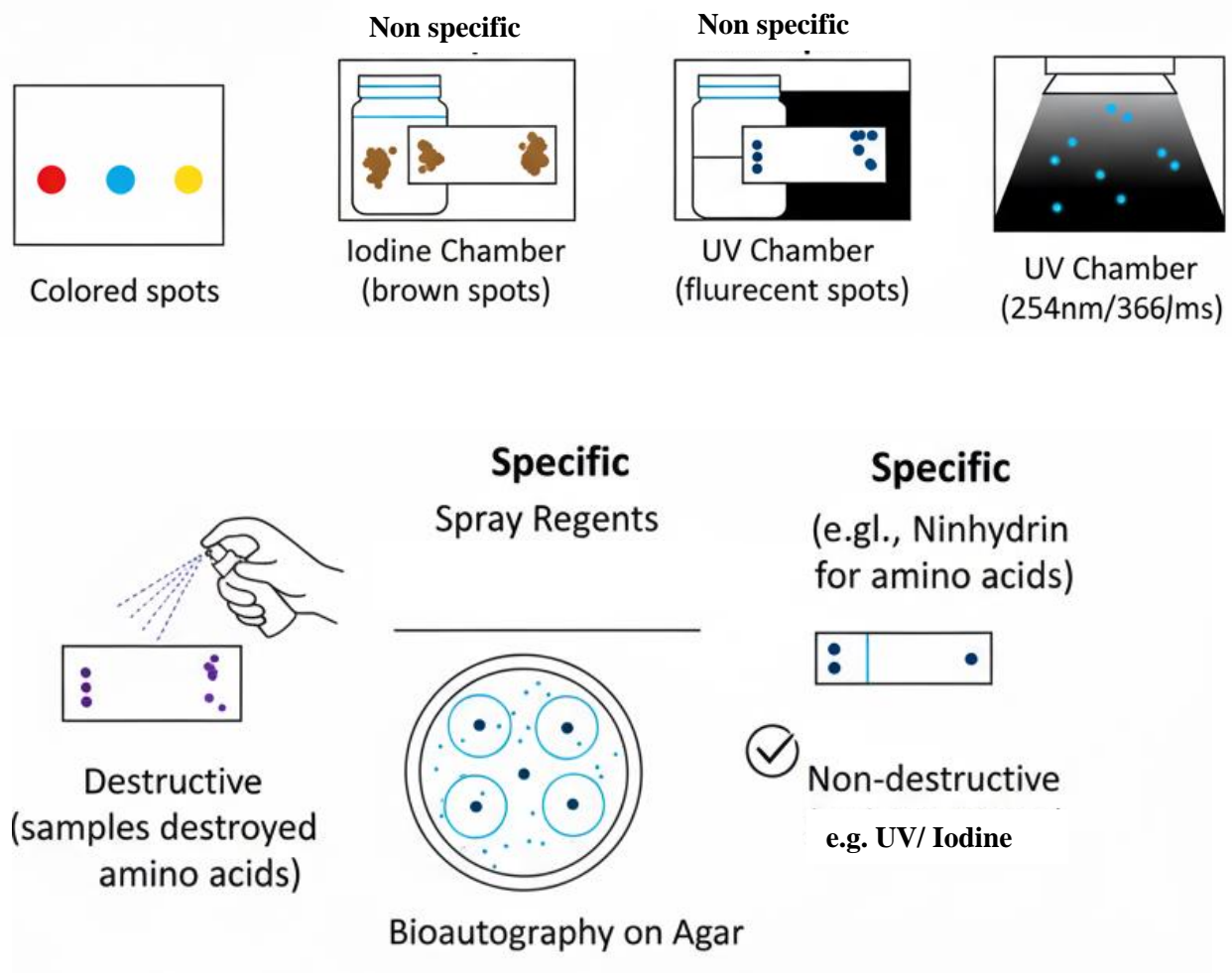
Sample Application



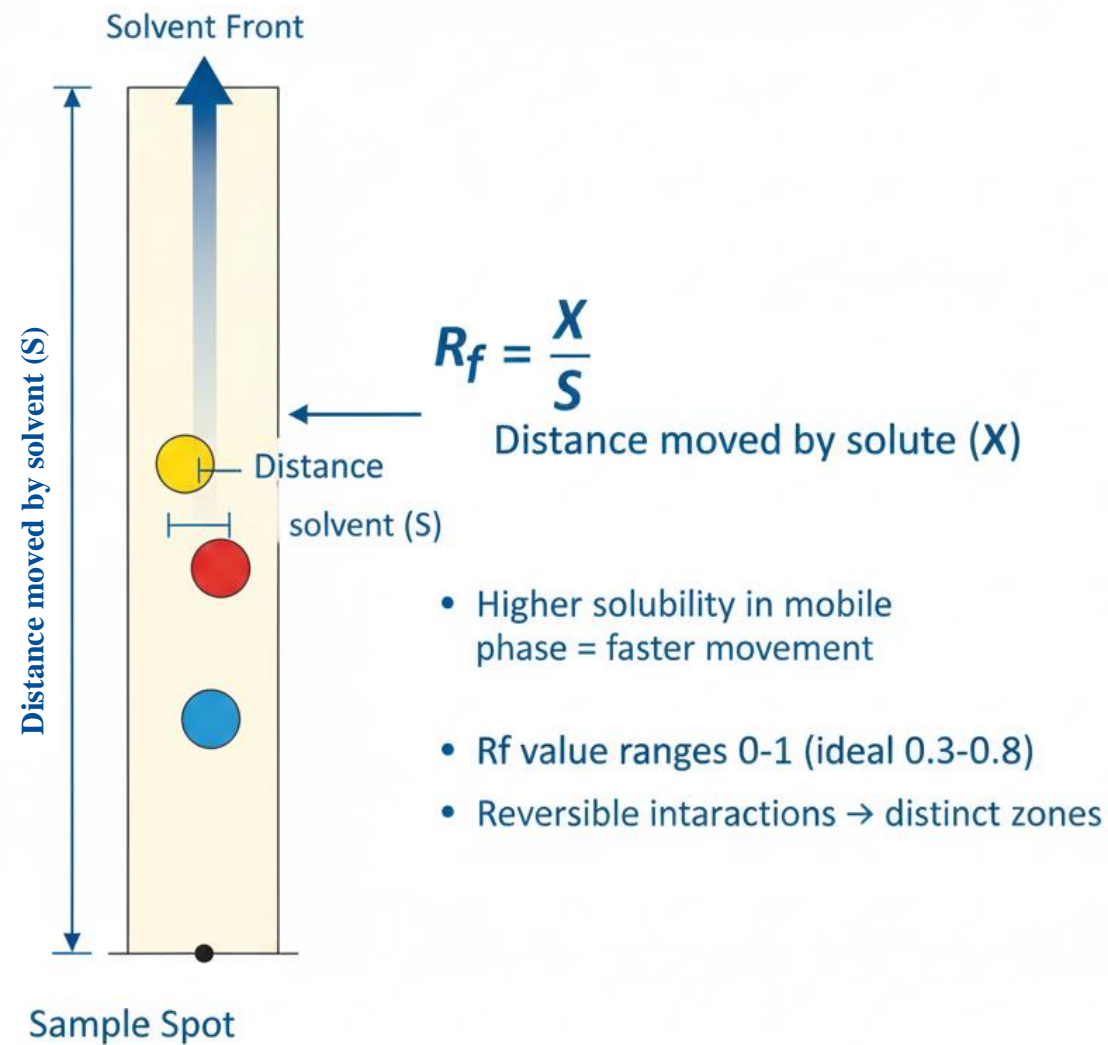
Development Techniques



Detection Methods

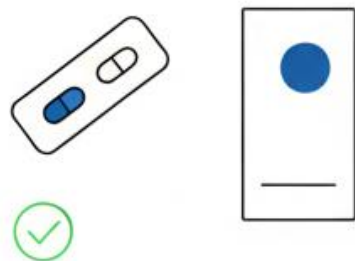


R_f value

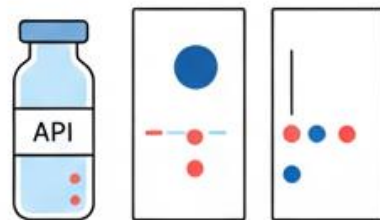


Applications

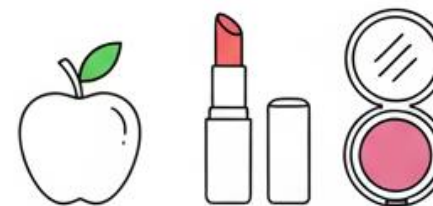
Purity Check



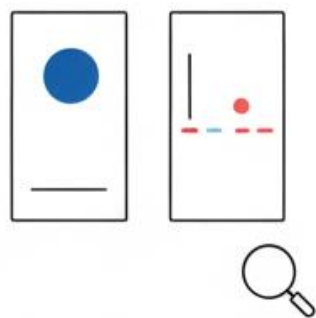
Impurity Detection



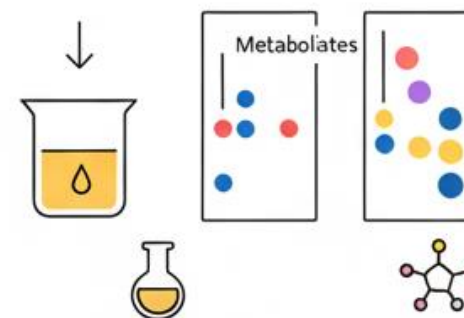
Cosmetics Analysis



Food Contaminants



Drug Metabolites



Advantages & Limitations

✓ Advantages

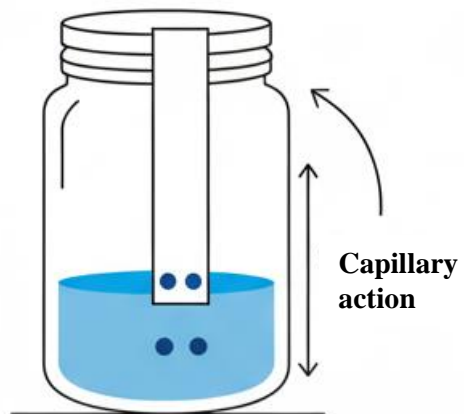
Simple	Rapid
Cheap	Low Material Needed
Space-Efficient	Identifies Organic/ /Inorganic Compounds

Limitations ✗

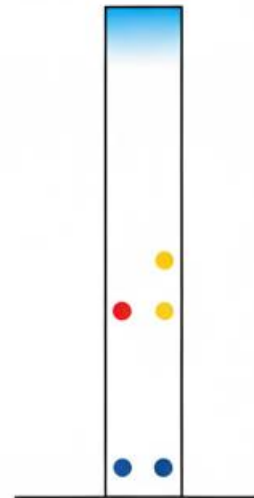
Not for Large Quantities	Not for Large Quantities
Less Effective for Quantitative	Quantitative Analysis
Can't Separate Complex Mixtures	Less Accurate

Summary

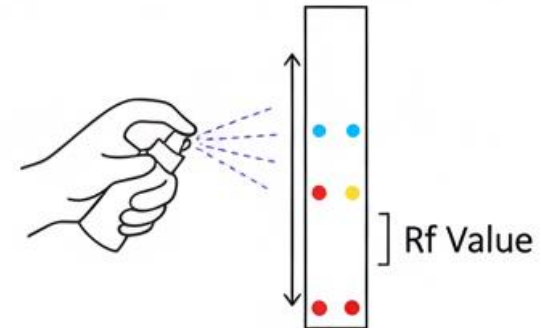
Setup



Development



Detection/Analysis



$$R_f = \frac{\text{Distance of Spot}}{\text{Distance of Solvent}}$$

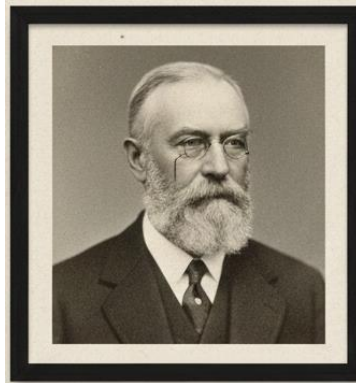
Assessment

1. Who first introduced paper chromatography?

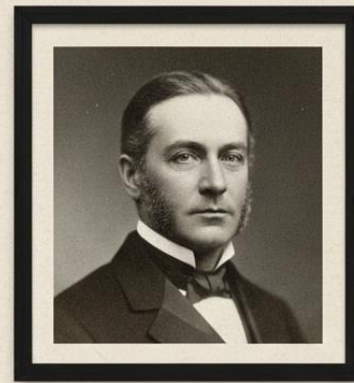


Assessment

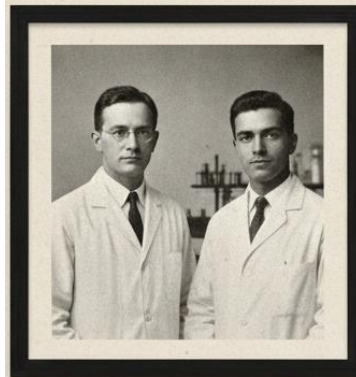
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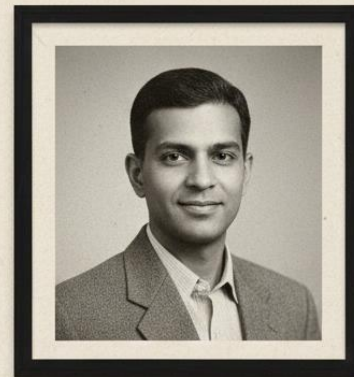
A) MIKHAïl Tswett



B) Christian FRIEDRICH
SCHÖNBEIN



C) KUHN and LEDERER



D) Dr. S. K. PATRO

Assessment

2. In paper partition chromatography, the stationary phase is primarily



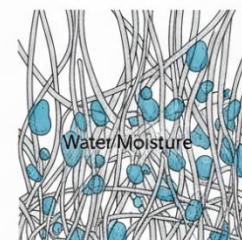
Assessment

2. In paper partition chromatography, the stationary phase is primarily

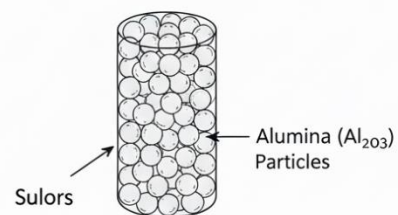
A) SILICA GEL IMPREGNATED ON PAPER



B) WATER/MOISTURE IN CELLULOSE FIBERS



C) ALUMINA



D) ORGANIC SOLVENTS (e.g., PETROLEUM ETHER)



Assessment

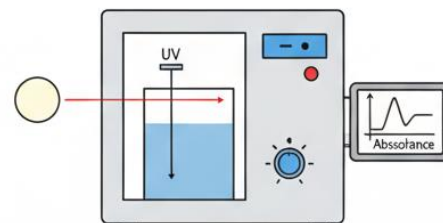
3. Colored spots in paper chromatography (e.g., plant pigments) can be detected by:



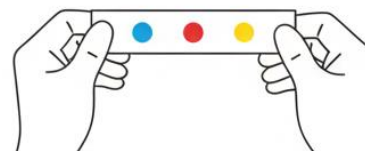
Assessment

3. Colored spots in paper chromatography (e.g., plant pigments) can be detected by:

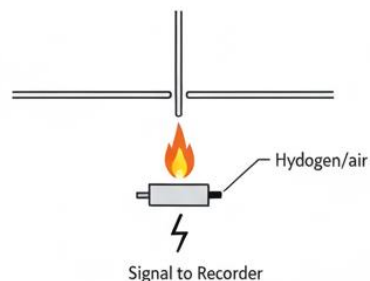
A) UV SPECTROPHOTOMETER



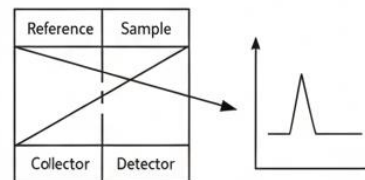
B) DIRECT VISUAL OBSERVATION



C) FLAME IONIZATION DETECTOR (FID)



D) REFRACTIVE INDEX DETECTOR (RID)



References

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2. Skoog DA, Holler FJ, Crouch SR. Principles of instrumental analysis. 7th ed. Boston: Cengage Learning; 2018.
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5. Chatwal GR, Anand SK. Instrumental methods of chemical analysis. Mumbai: Himalaya Publishing House; latest edition.
6. Willard HH, Merritt LL, Dean JA, Settle FA. Instrumental methods of analysis. 7th ed. New Delhi: CBS Publishers; 1988.
7. Miller JM. Chromatography: concepts and contrasts. 2nd ed. Hoboken: John Wiley & Sons; 2009.
8. Connors KA. A textbook of pharmaceutical analysis. 3rd ed. New York: John Wiley & Sons; 1982.
9. Braithwaite A, Smith FJ. Chromatographic methods. 5th ed. Dordrecht: Springer; 1999.

Thank
you!