

Exam Focus

ORGANIC CHEMISTRY • PURIFICATION TECHNIQUES

Chromatography

Mastering the separation, purification, and identification of organic compounds.

The Universal Engine of Separation

Every chromatographic technique relies on a mixture moving across two distinct phases to separate its components.

[Stationary Phase]



A solid or liquid fixed in place.

[Mobile Phase]



A pure solvent, mixture, or gas that slowly moves over the stationary phase.

Adsorption

Components separate based on differential sticking (adsorbing) to the stationary phase.

Partition

Components separate based on continuous differential distribution between the two phases.

ADSORPTION CHROMATOGRAPHY

Column Chromatography

Separation driven by downward gravity and differential adsorption.

Stationary Phase

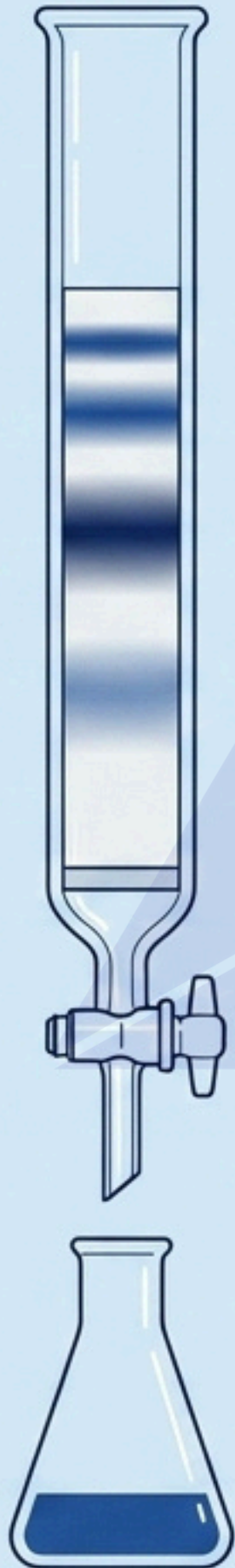
Silica gel or alumina packed in a glass tube.

Mobile Phase

Eluant (solvent) moving downward.

Mechanism

Compounds most readily adsorbed are retained near the top; those with lower affinity travel further down.





You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



Thin Layer Chromatography (TLC)

Capillary action drives the mobile phase up a specially coated glass plate.

Setup



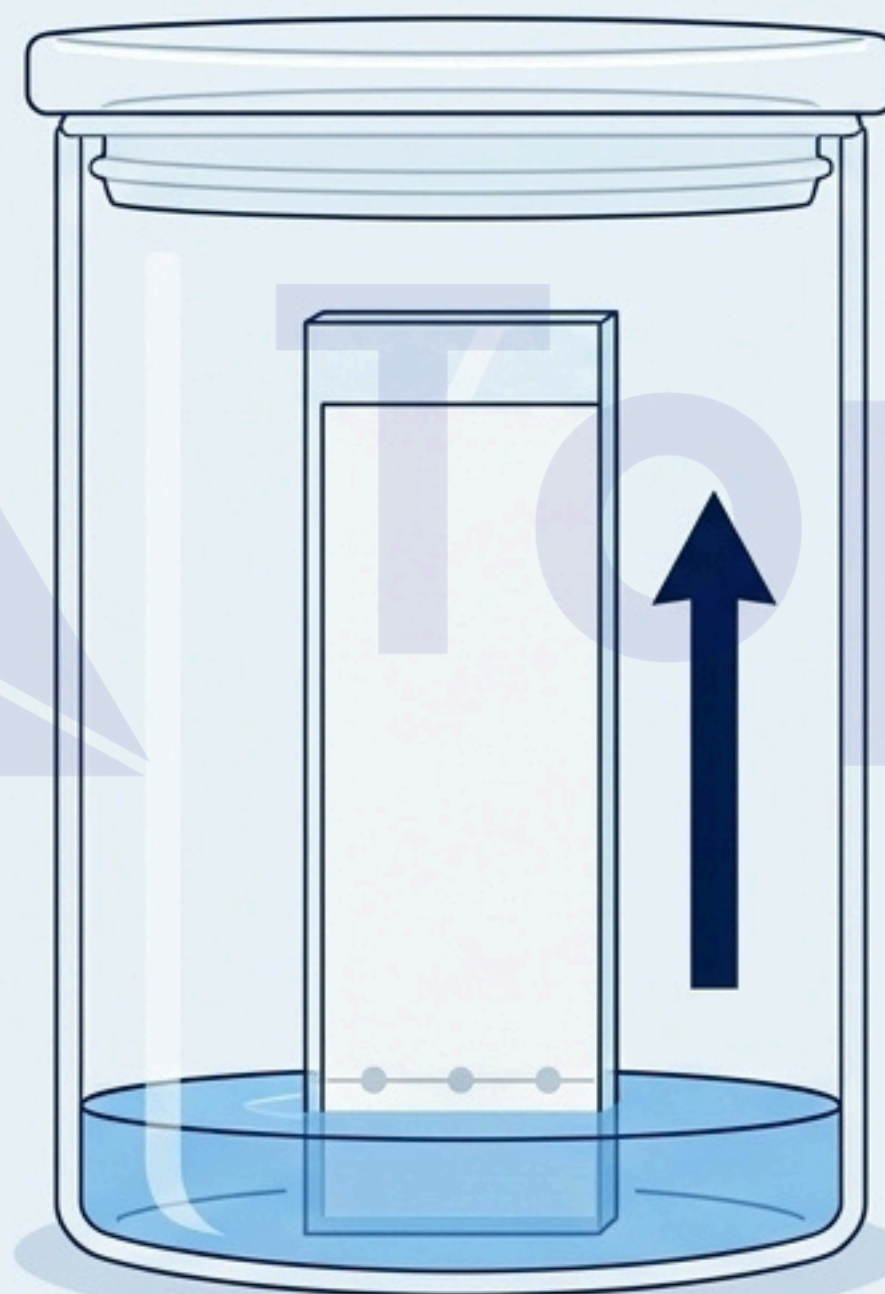
[Stationary Phase]

~0.2mm slit of silica gel or alumina on a glass plate (chromaplate).
Base line drawn 2cm from bottom.



[Mobile Phase]

Eluent in the jar rising via capillary action.



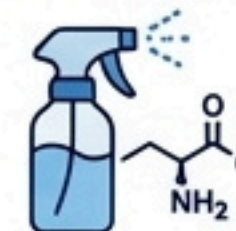
UV Light:

For fluorescent compounds.



Iodine Jars:

Creates brown spots.

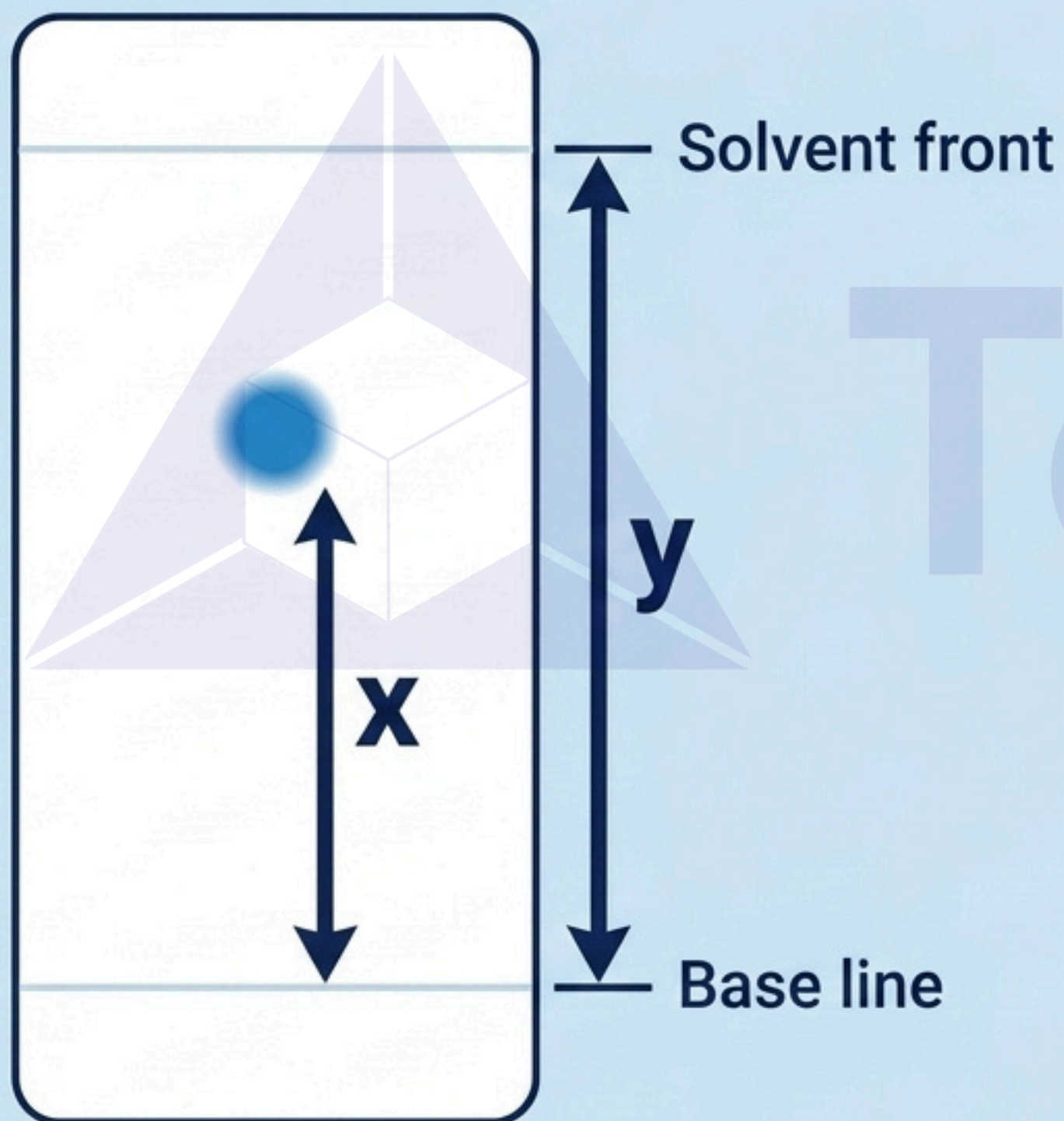


Ninhydrin Spray:

Specifically for detecting amino acids.

Calculating the Retardation Factor (Rf)

A quantitative measure of how far a substance travels relative to the solvent.



$$R_f = \frac{x}{y}$$

- **x** = distance moved by substance from base line.
- **y** = distance moved by solvent from base line.

PARTITION CHROMATOGRAPHY

Paper Chromatography

Separation based on continuous differential partitioning between two phases.

The Twist:

The chromatography paper itself isn't the stationary phase.



[Stationary Phase]

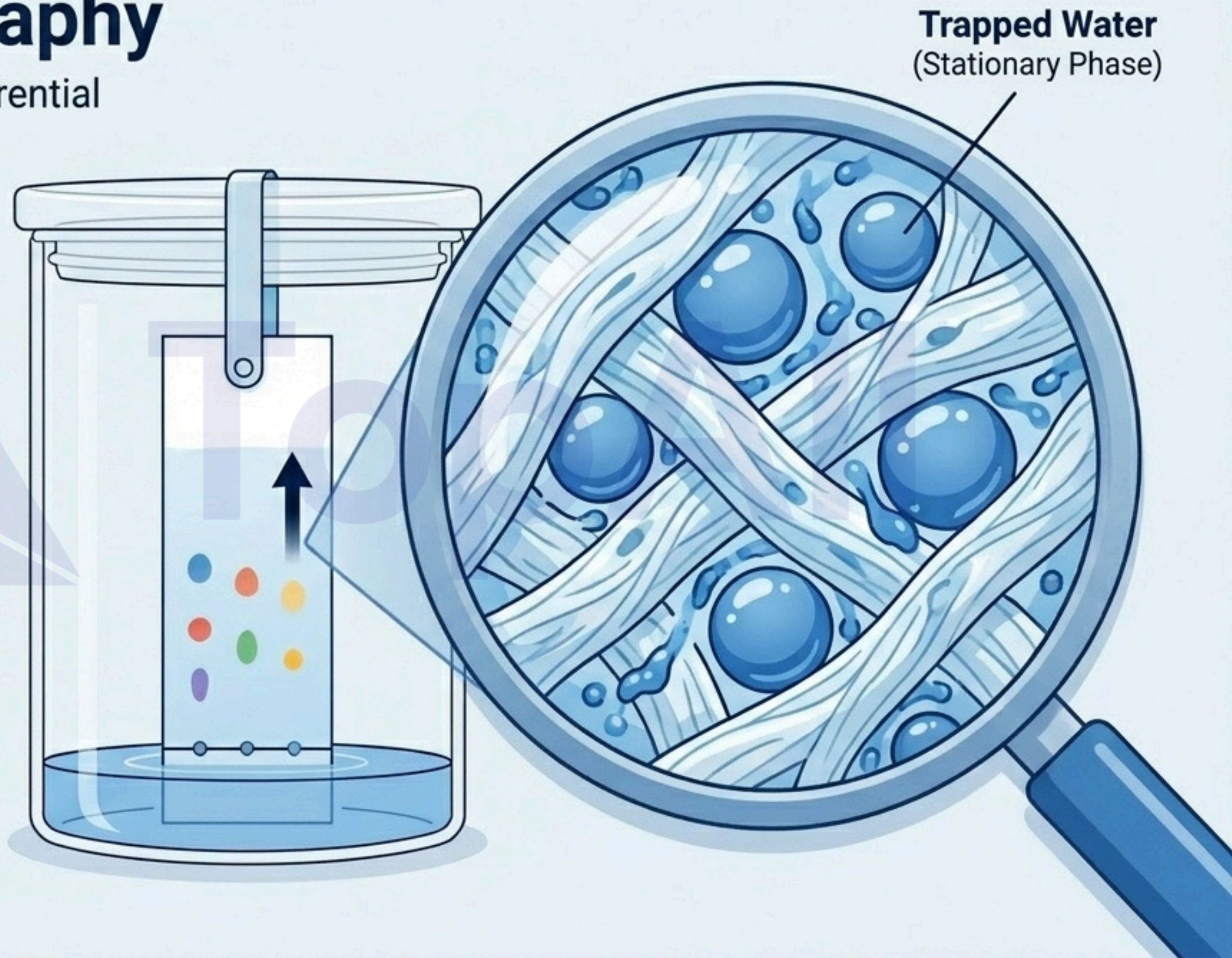
Water trapped inside the paper's pores.



[Mobile Phase]

Solvent rising via capillary action.

Result: A developed paper strip is officially called a **Chromatogram**.



Master Summary Matrix

You've got this! Quick reference for exam recall.

Technique	Principle	Stationary Phase	Mobile Phase	Driver
Column	Adsorption	Silica/Alumina Solid	Solvent Liquid	Gravity
TLC	Adsorption	Silica/Alumina on Glass Solid	Solvent Liquid	Capillary Action
Paper	Partition	Trapped Water Liquid	Solvent Liquid	Capillary Action



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis