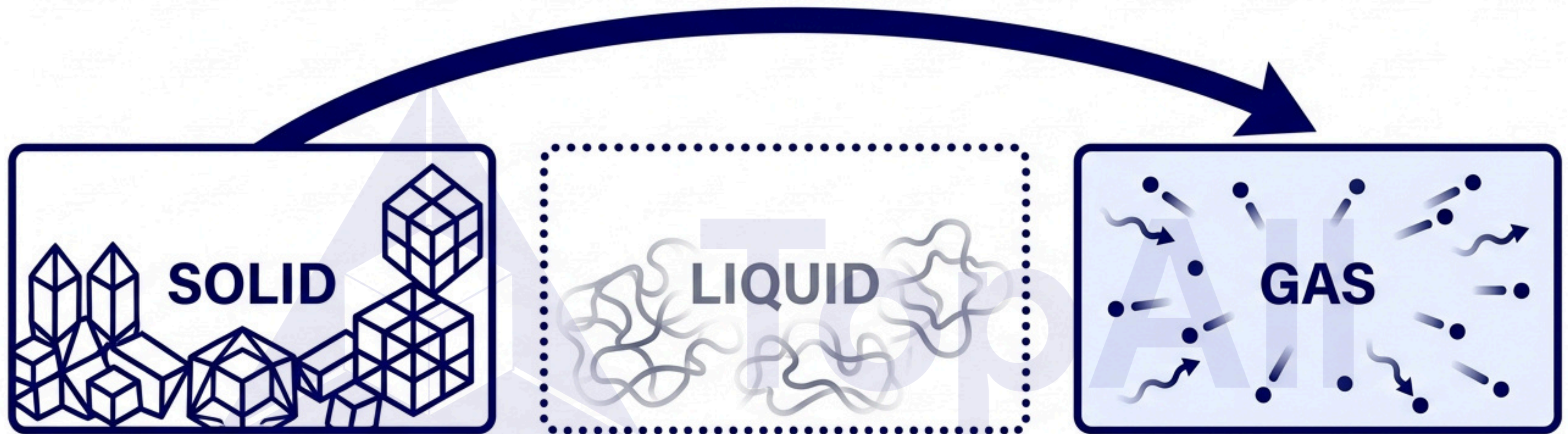


The Sublimation Phenomenon

Bypassing the liquid phase entirely.



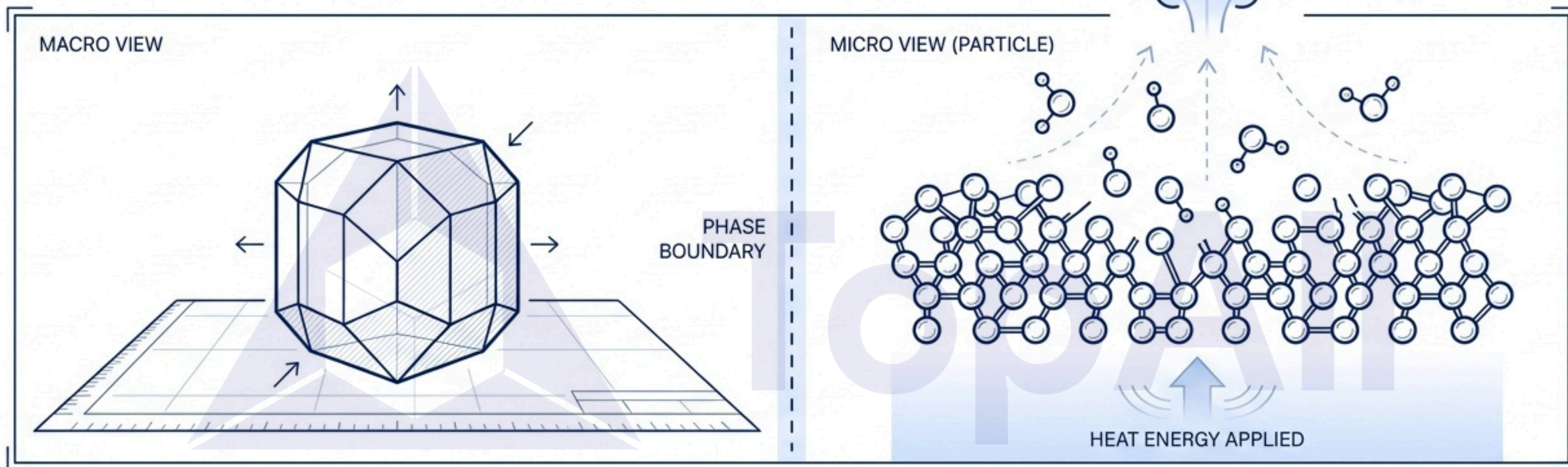
Standard Phase Change: Solid $\rightarrow$ Liquid $\rightarrow$ Gas.

Sublimation: Heating causes certain solid substances to transition directly into the vapour state without ever passing through a liquid intermediate.

Key Principle for Purification: Phase transition differences allow for chemical separation.

The Target: Sublimable Compounds

Organic compounds engineered for direct vaporization.



To utilize sublimation as a purification technique, the target organic compound must possess the inherent physical ability to sublime.

- ✓ Requires high vapour pressure at temperatures below its melting point.
- ✓ Typically characterized by relatively weak intermolecular forces.
- ✓ Common Examples: Naphthalene, Camphor, and Benzoic Acid.



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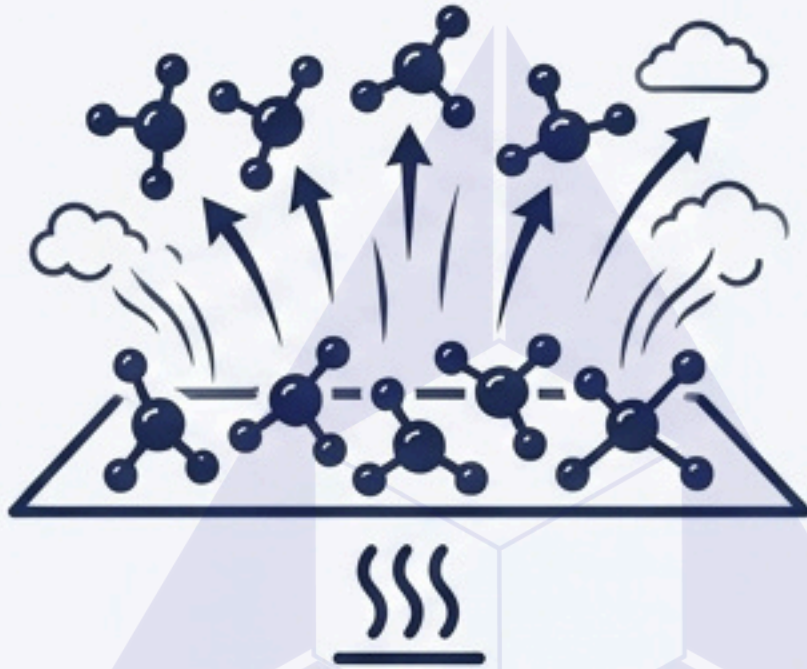
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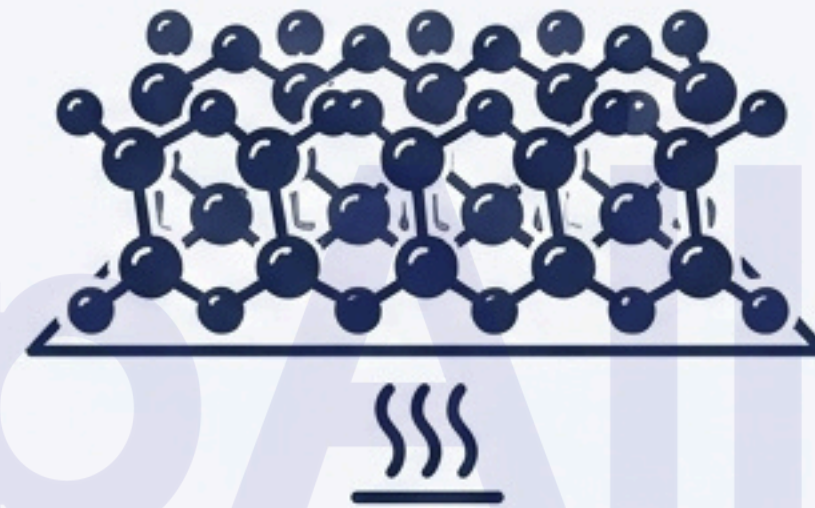
The Contaminant: Non-Sublimable Impurities

Exploiting contrasting physical states for separation.



The Target (Sublimable)

Vaporizes under gentle heating. Escapes the mixture as a pure gas.



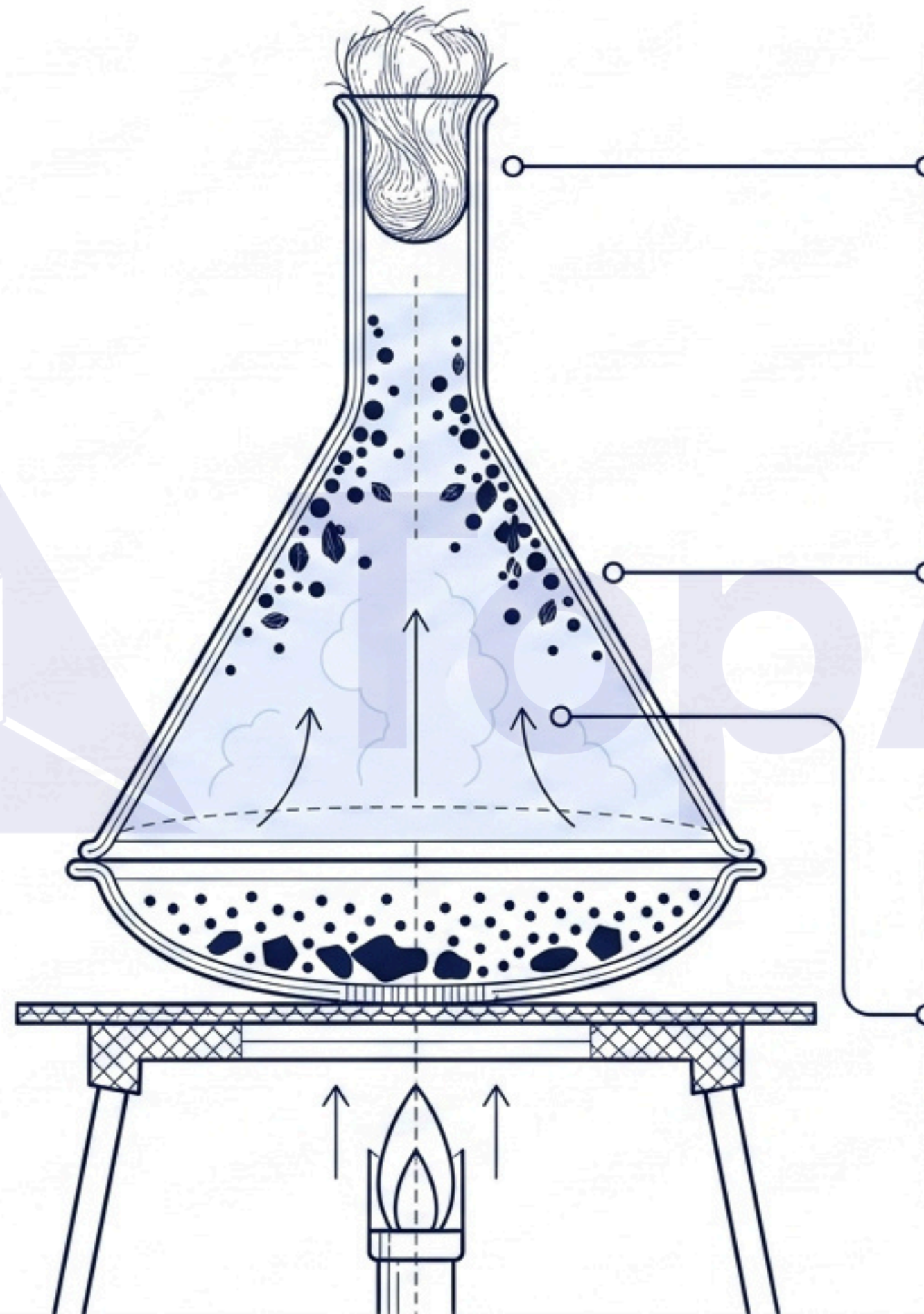
The Impurity (Non-Sublimable)

Lacks the required vapour pressure. Remains trapped in the solid state in the heating vessel.

The Principle: Sublimation separates sublimable compounds from non-sublimable impurities based on their divergent responses to heat.

The Apparatus Blueprint

Vaporization followed by immediate deposition.



1. The Source:

Mixture (target + impurity) is gently heated in a china dish.

2. The Trap:

An inverted funnel (plugged with cotton to prevent vapor escape) captures the rising gas.

3. The Deposition:

The pure vapor hits the cooler upper walls of the funnel, immediately condensing back into a solid (the sublimate). Impurities remain in the dish.

Revision Frame: Sublimation

[Screenshot this summary for quick reference]



The Principle

Solid → Vapour (direct).
Bypasses the liquid phase entirely upon the application of heat.



The Condition

Requires a mixture containing one sublimable compound (high vapour pressure, e.g., camphor) and non-sublimable impurities (stable as solid).



The Process

Heat mixture → Pure compound vaporizes → Vapour rises → Condenses (deposits) on a cool surface → Impurities remain trapped behind.



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