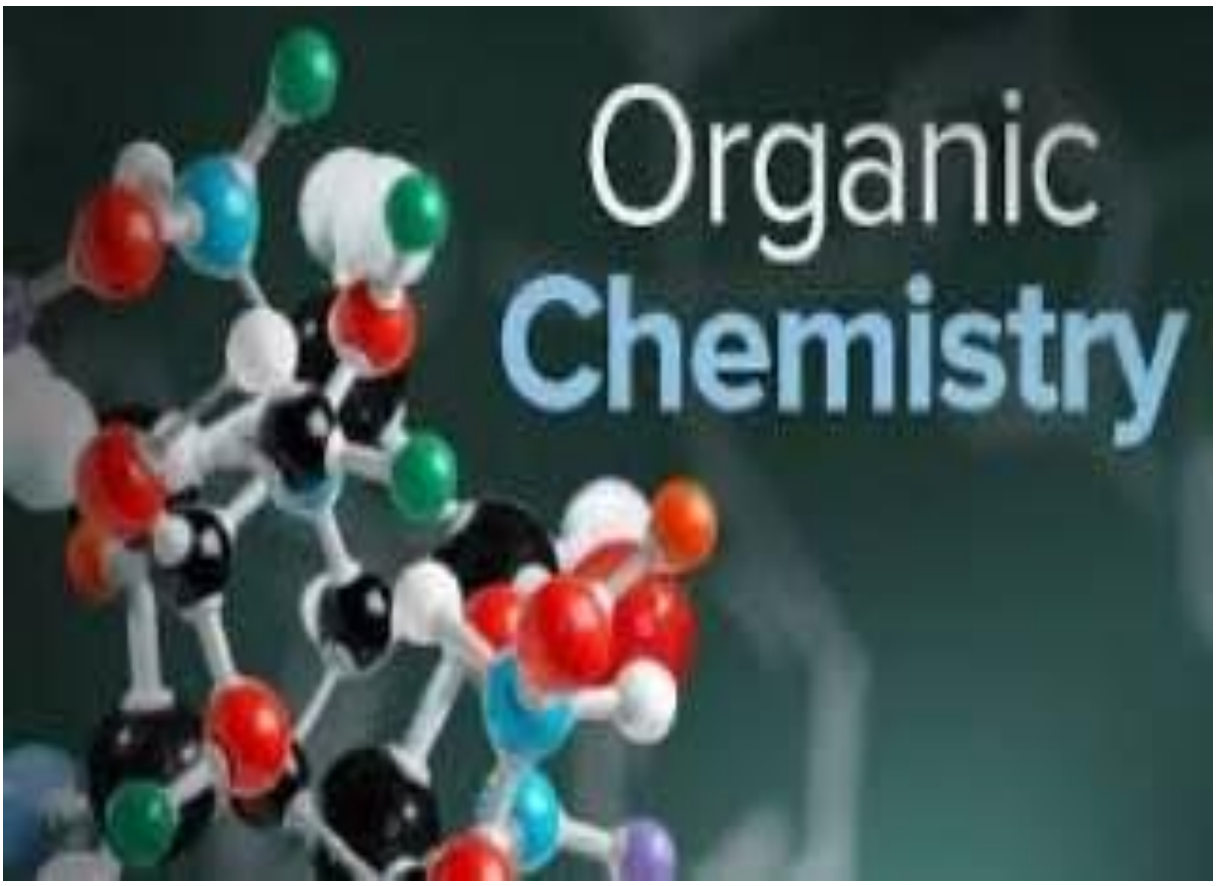
الكيمياء العضوية

المحاضرة الثالثه

التقطير



Distillation in Organic Chemistry

Definition of Distillation:

Distillation is a process used to separate components in a liquid mixture based on differences in boiling points. The mixture is heated until the component with the lower boiling point evaporates, then the vapor is condensed and collected as a pure liquid.

Types of Distillation:

1. Simple Distillation:

• Used for separating liquids with large differences in boiling points (>25°C).

• Example: Separating water from alcohol.

2. Fractional Distillation:

• Used for separating liquids with close boiling points.

• A fractionating column improves separation efficiency.

• Example: Separation of petroleum fractions.

3. Steam Distillation:

• Used for extracting compounds that decompose at high temperatures.

• Example: Extraction of essential oils from plants.

4. Vacuum Distillation:

• Used for compounds with very high boiling points.

• Lowering pressure reduces the boiling point and prevents thermal decomposition.

• Example: Distillation of heavy oils.

Importance of Distillation:

• Purification of organic compounds.

• Extraction of natural substances.

• Production of fuels and industrial chemicals.