Al- Mustaqbal University

College of Science

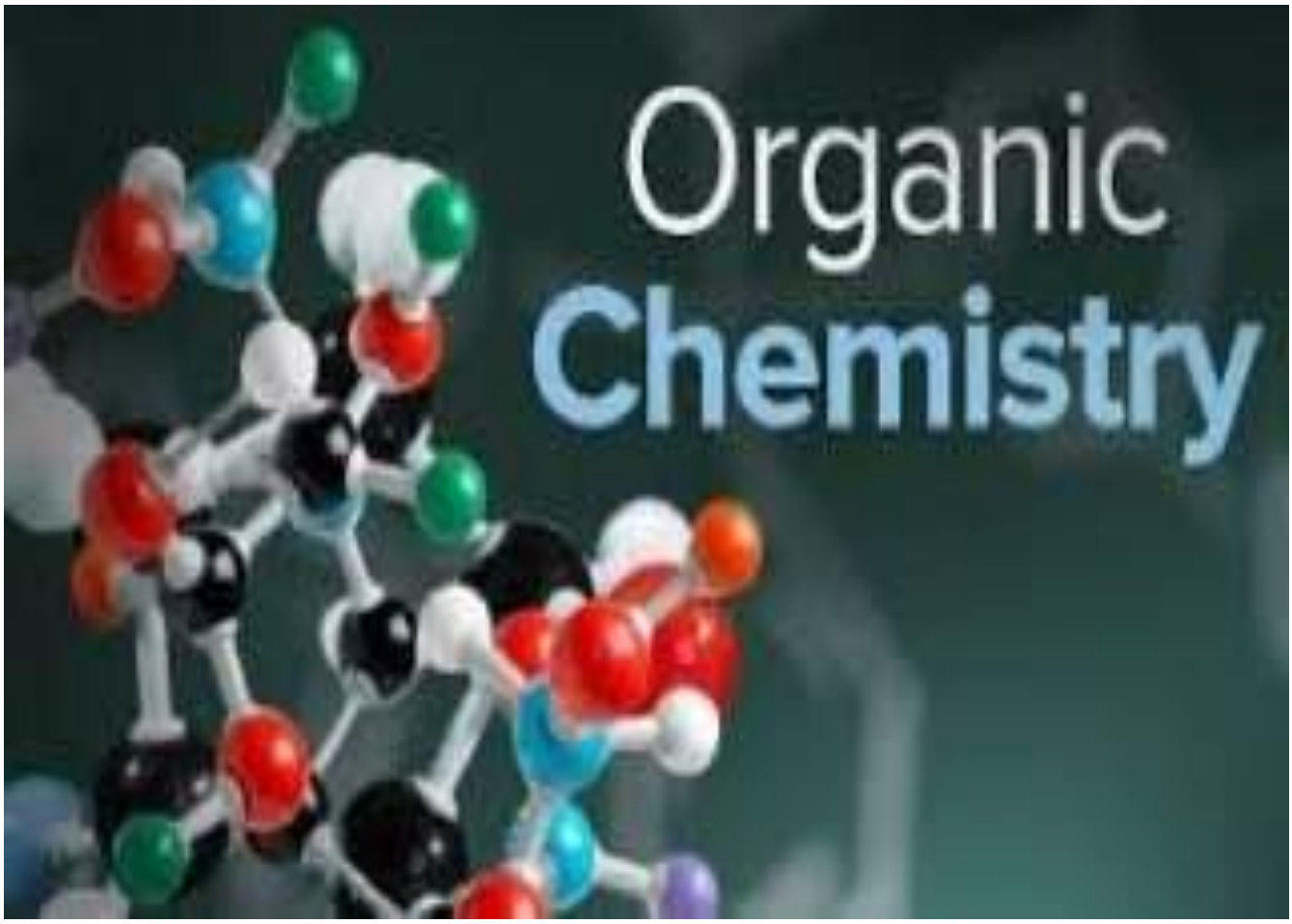
Medical Physics Department

First Stage

الكيمياء العضوية

المحاضرة الثانية

نقطة الغليان



Boiling Point in Organic Chemistry

Definition of Boiling Point:

The boiling point is the temperature at which the vapor pressure of a liquid equals the atmospheric pressure, causing the liquid to turn into a gas.

Factors Affecting the Boiling Point:

1. Intermolecular Forces:

• The stronger the intermolecular forces, the higher the boiling point.

• Hydrogen bonding significantly increases the boiling point (e.g., water and alcohols).

• Van der Waals forces (increase with molecular size) affect nonpolar compounds.

2. Molecular Weight:

• Larger molecules have higher boiling points due to stronger dispersion forces.

3. Molecular Shape:

• Linear molecules have higher boiling points than branched molecules because they have a larger surface area for intermolecular interactions.

4. Polarity Effect:

• Polar compounds have higher boiling points than nonpolar compounds due to dipole-dipole interactions.

5. Atmospheric Pressure:

• The boiling point decreases at lower atmospheric pressure, such as at high altitudes.

Importance of Boiling Point in Chemical Applications:

- Separation of organic compounds using distillation.
- Determination of compound nature (polar or nonpolar).
- Purity analysis, as impurities alter the boiling point.