FLAME PHOTOMETER

Principle:
Based on the emission of characteristic radiation when metal ions are excited in a flame. The intensity of emitted light is proportional to the concentration of the element.

Elements Detected:
Na^+, K^+, Ca^{2+}, Li^+

Flame Source: LPG / Natural gas + Air
Detector: Photocell / Photomultiplier
Filters: Element-specific optical filters

Standard Operating Procedure (SOP)

1. Instrument Start-Up

• Switch ON main power supply
• Open air supply first, then gas supply
• Ignite flame carefully
• Allow **10–15 minutes** for stabilization

2. Preparation of Standards & Samples

• Prepare standard solutions of known concentrations
• Prepare blank using distilled water
• Dilute samples if required

3. Instrument Calibration

• Aspirate distilled water → set zero
• Aspirate highest standard → set maximum reading
• Aspirate intermediate standards to check linearity

4. Sample Analysis

• Aspirate sample solution
• Select appropriate filter (Na / K / Ca / Li)
• Record emission intensity
• Repeat for accuracy

5. Data Interpretation

• Compare sample readings with standards
• Calculate concentration using calibration curve

6. Instrument Shutdown

• Aspirate distilled water to clean burner
• Turn OFF gas supply first
• Turn OFF air supply
• Switch OFF instrument

Applications

• Estimation of sodium, potassium, calcium
• Electrolyte analysis
• Pharmaceutical & herbal drug analysis
• Water and soil analysis
• Clinical & research laboratories

Precautions

• Ensure proper ventilation
• Never ignite flame without air supply
• Avoid salt deposits on burner
• Clean nebulizer regularly