SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

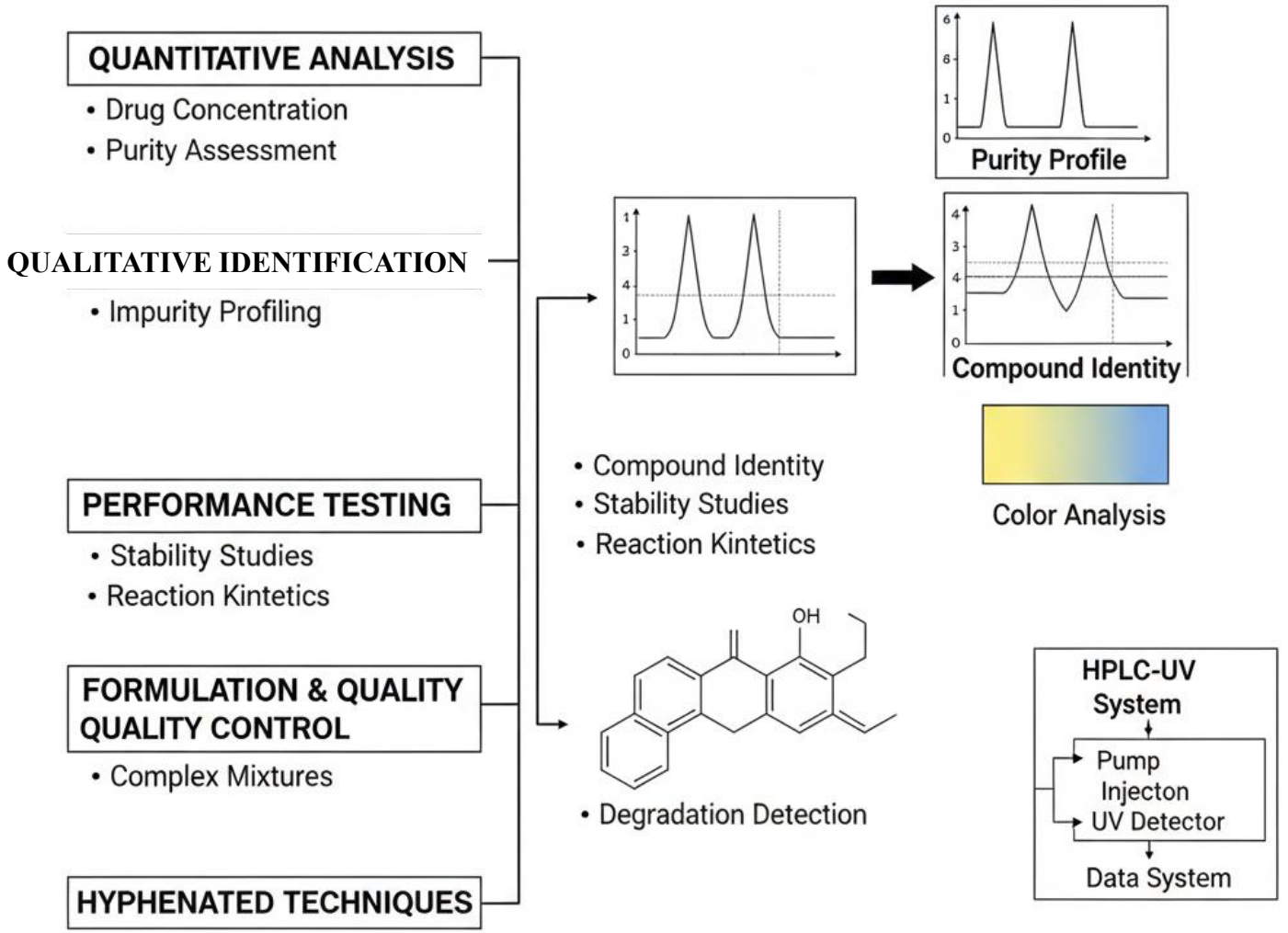
Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Approved by Pharmacy Council of India, New Delhi.
Coimbatore -641035

COURSE NAME: INSTRUMENTAL METHODS OF ANALYSIS (BP 701 T)

VII SEM/ IV YEAR

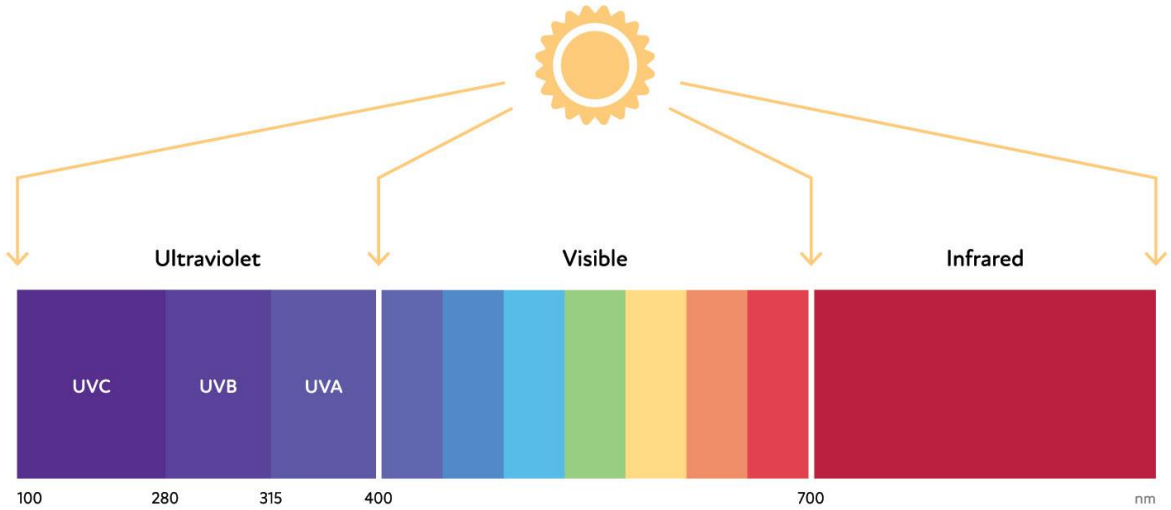
TOPIC 6: APPLICATIONS OF UV-VISIBLE SPECTROPHOTOMETRY

MINDMAP:


QUANTITATIVE ANALYSIS
• Drug Concentration
• Purity Assessment
QUALITATIVE IDENTIFICATION
• Impurity Profiling
PERFORMANCE TESTING
• Stability Studies
• Reaction Kintetics
FORMULATION & QUALITY QUALITY CONTROL
• Complex Mixtures
HYPHENATED TECHNIQUES
Purity Profile
Compound Identity
Color Analysis
• Compound Identity
• Stability Studies
• Reaction Kintetics
OH
• Degradation Detection
HPLC-UV System
Pump
Injecton
UV Detector
Data System

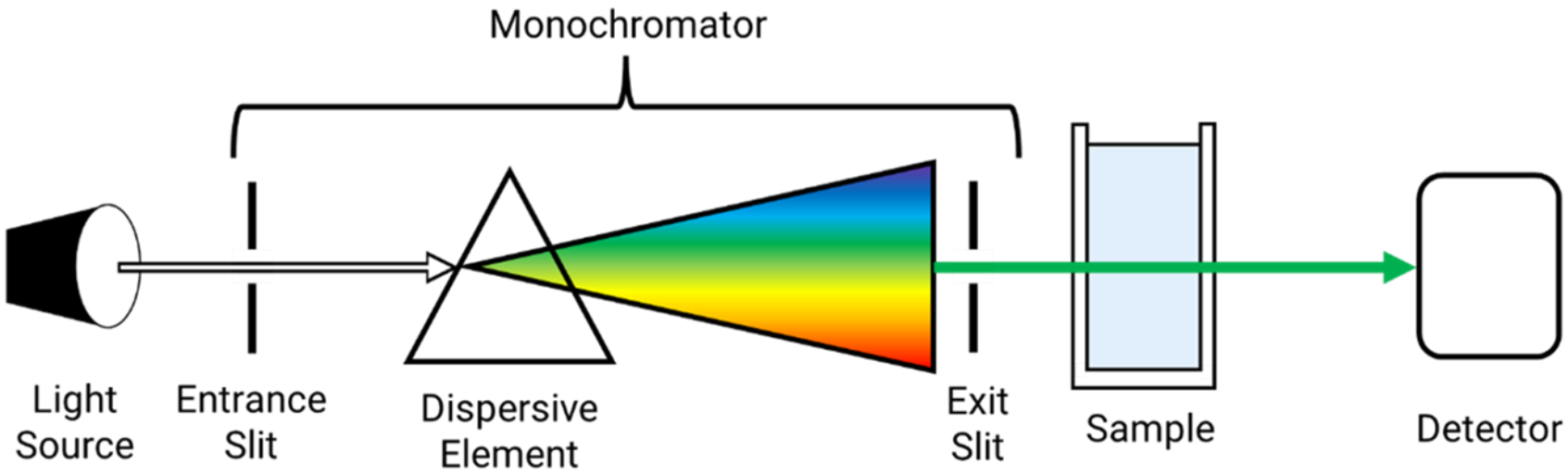
What is UV-Visible Spectroscopy?

Uses UV (200–380 nm) and Visible (380–780 nm) light.

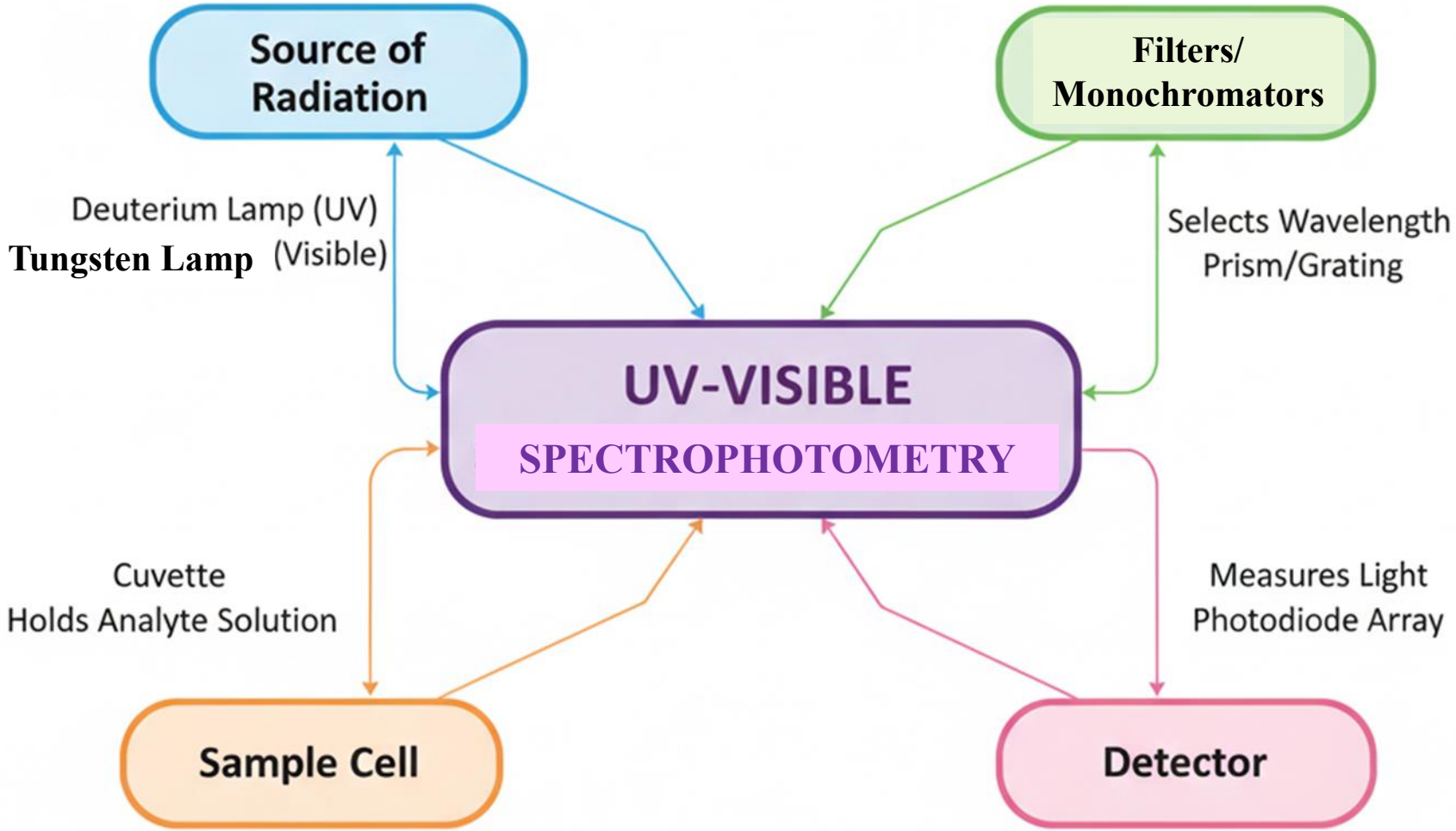


The Spectrum of Light

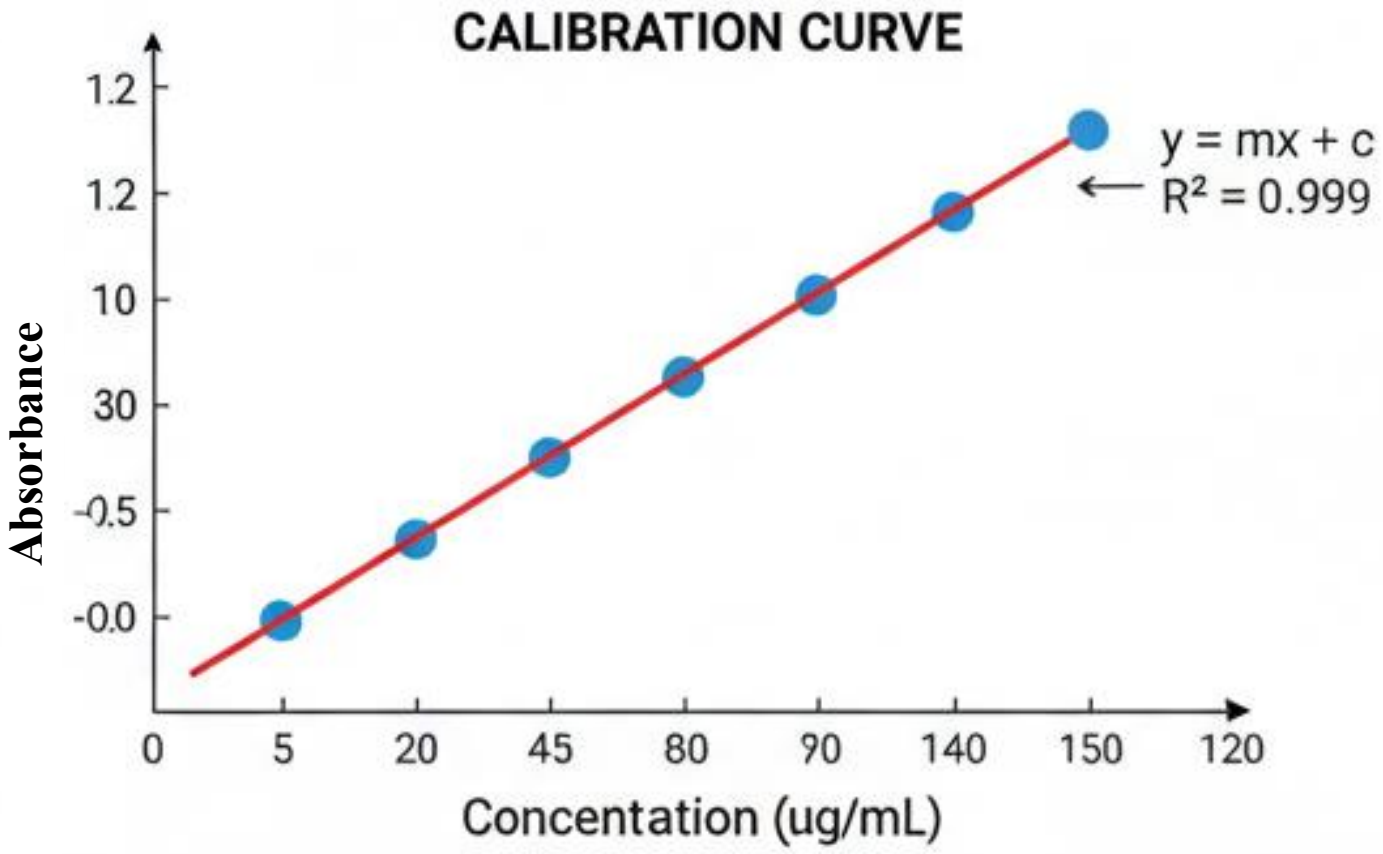
Principle of UV-Visible Spectrophotometry



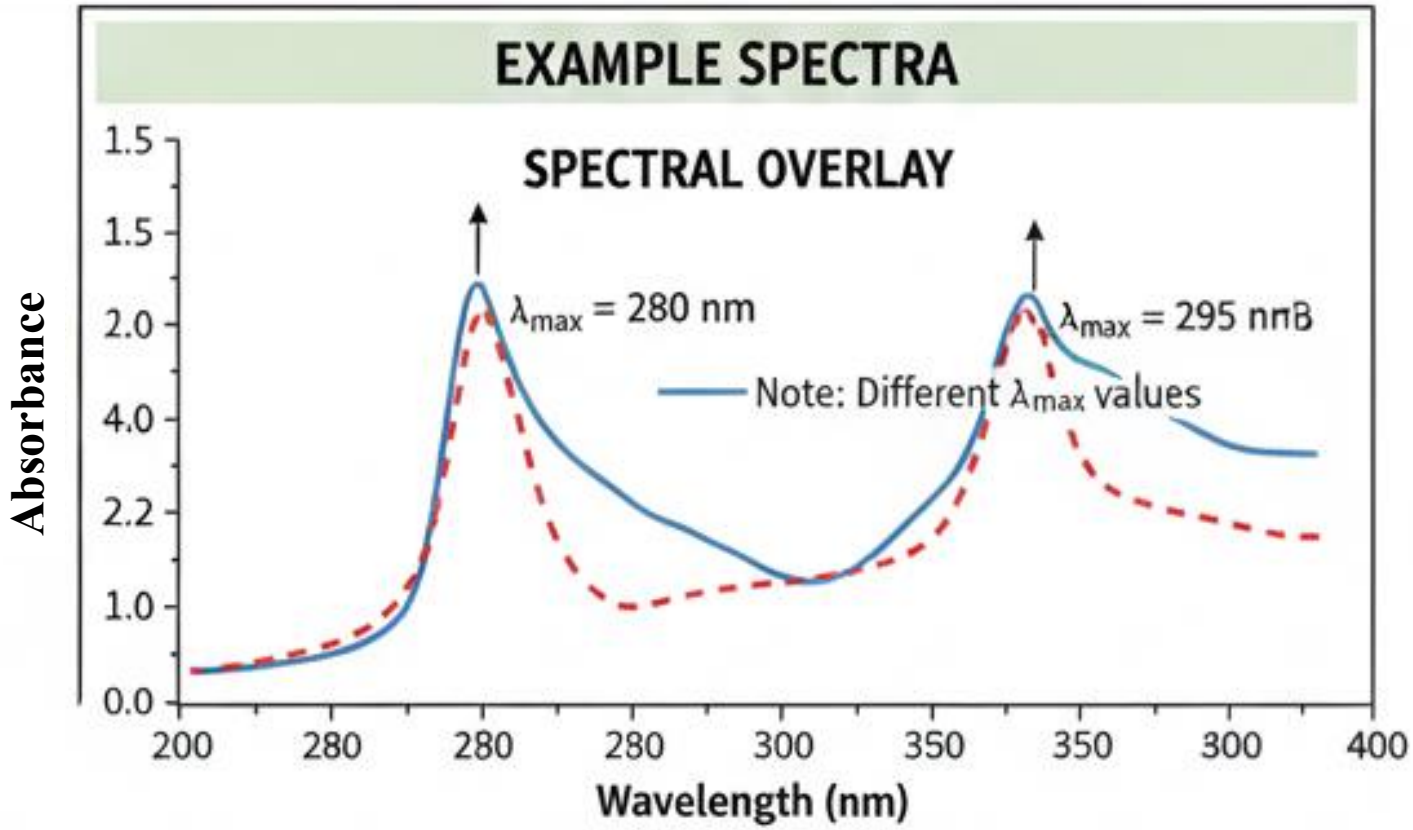
Instrumentation



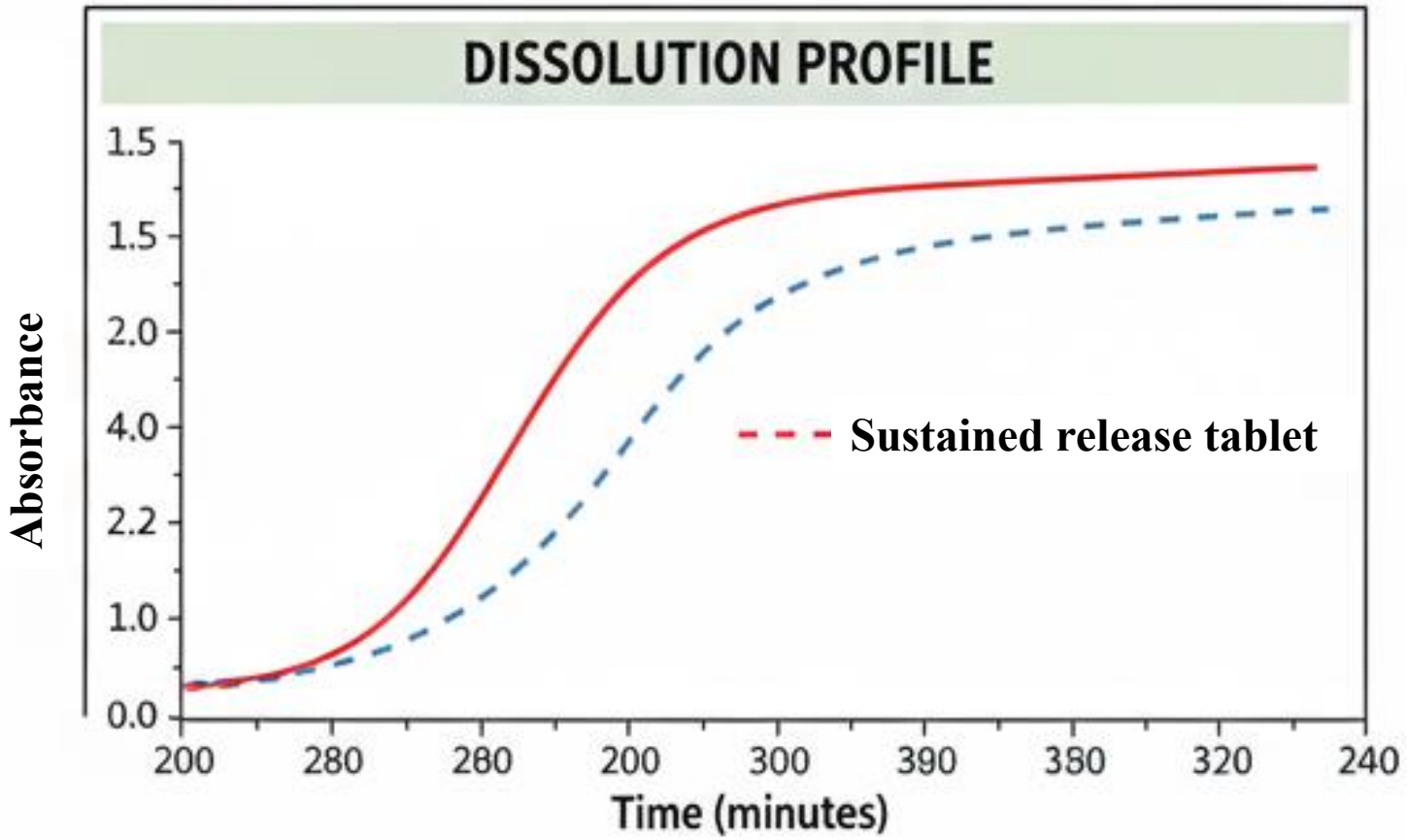
Quantitative Analysis of Drug Concentration



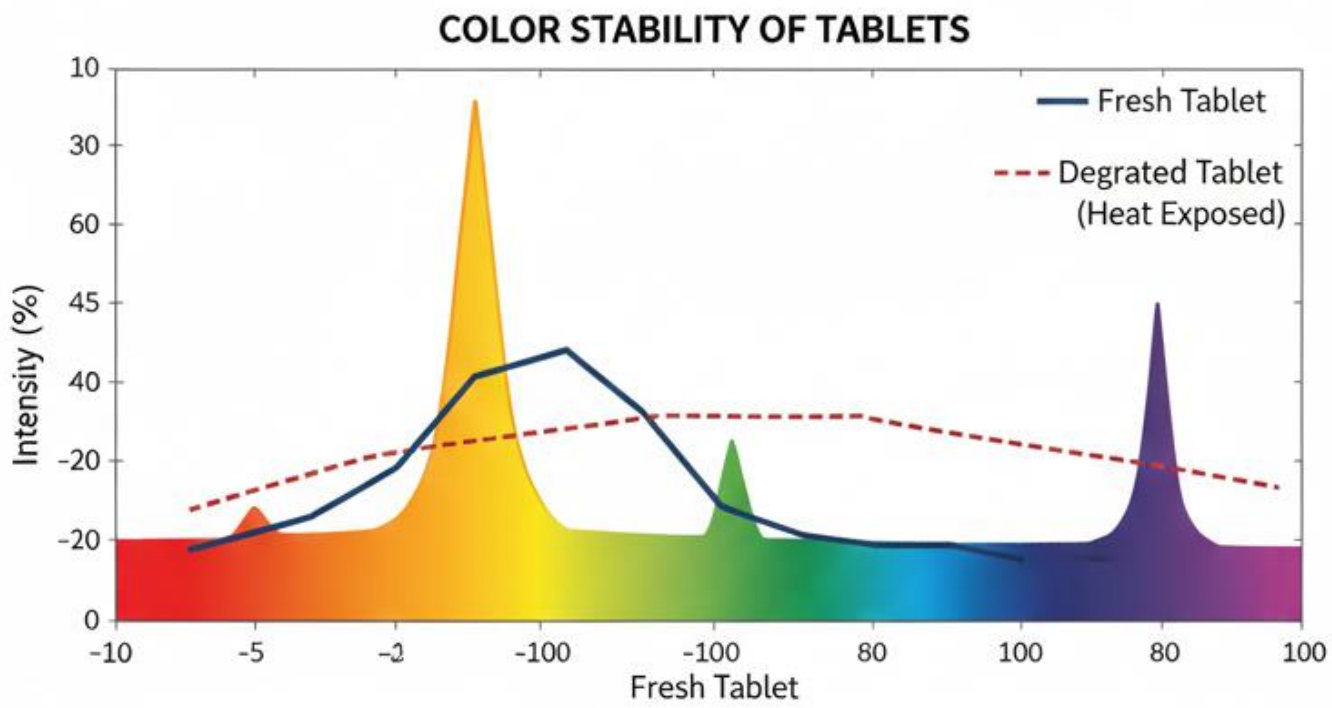
Qualitative Identification of Compounds



Dissolution Testing



Color Analysis in Pharmaceutical Products



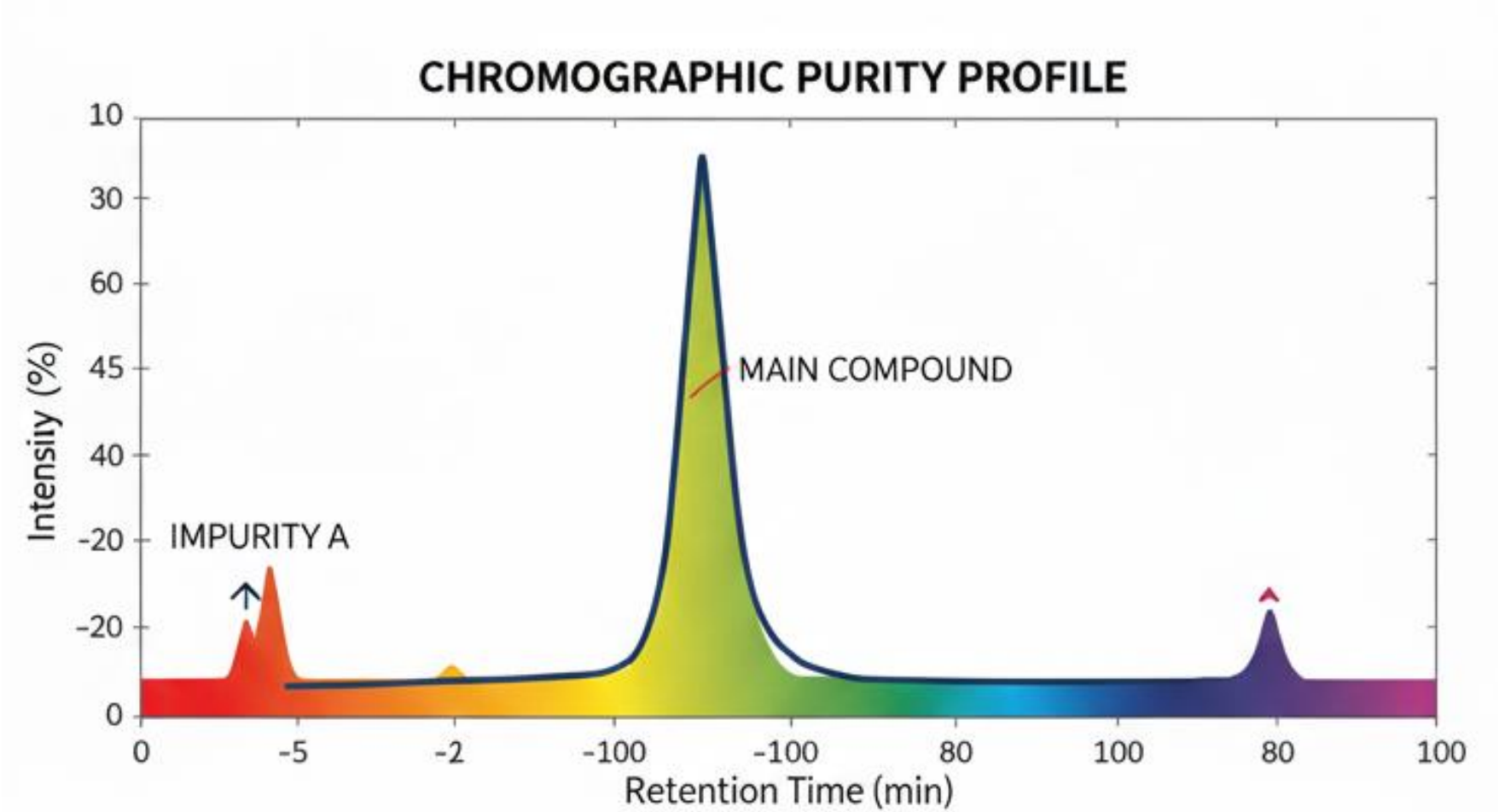
VISUAL EXAMPLE:

Day 0 Day 30

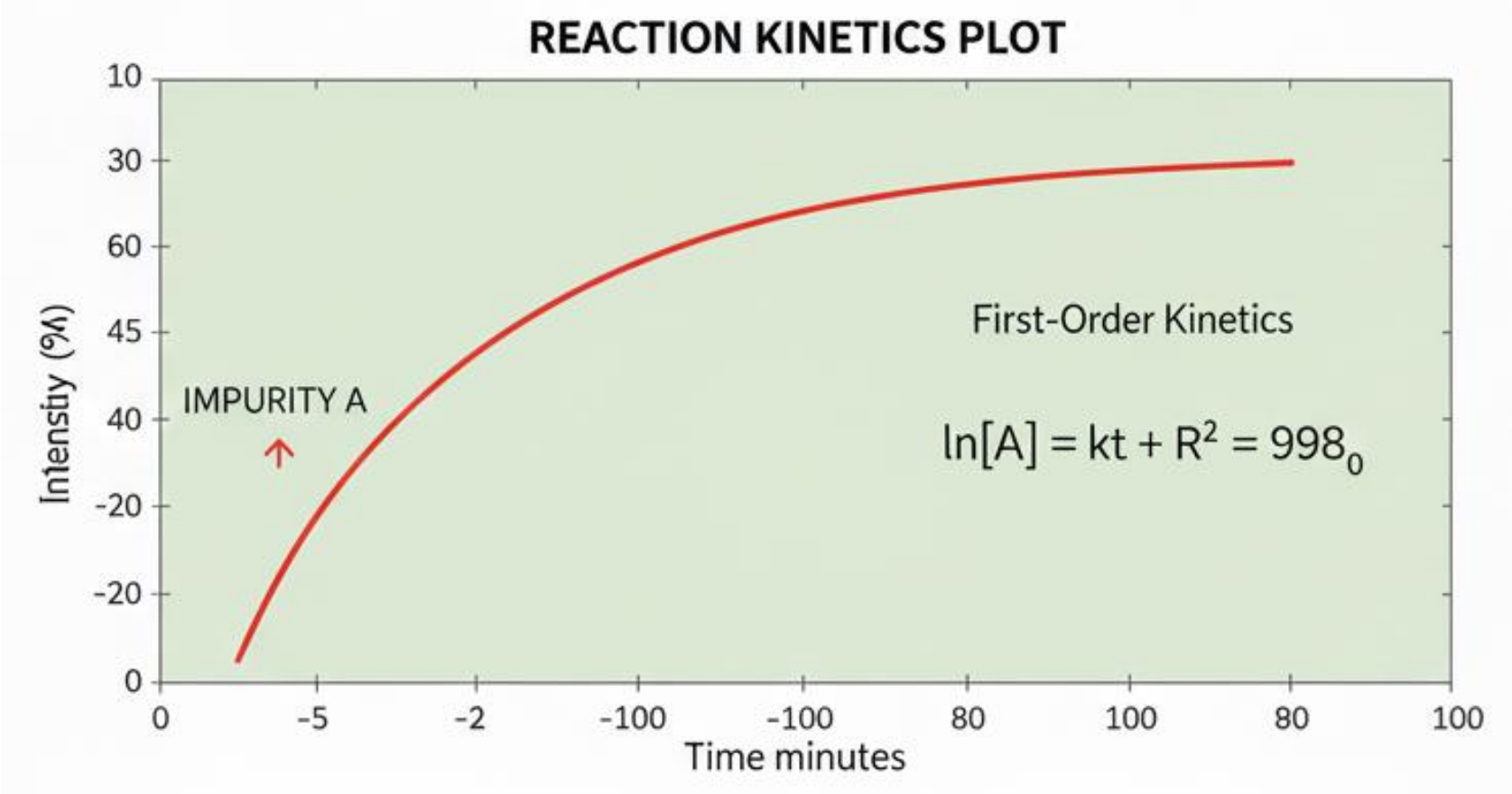
KEY POINT:

- Color change = Chemical change
- Indicates stability/potency loss
- Crucial for patient perception

Purity Assessment

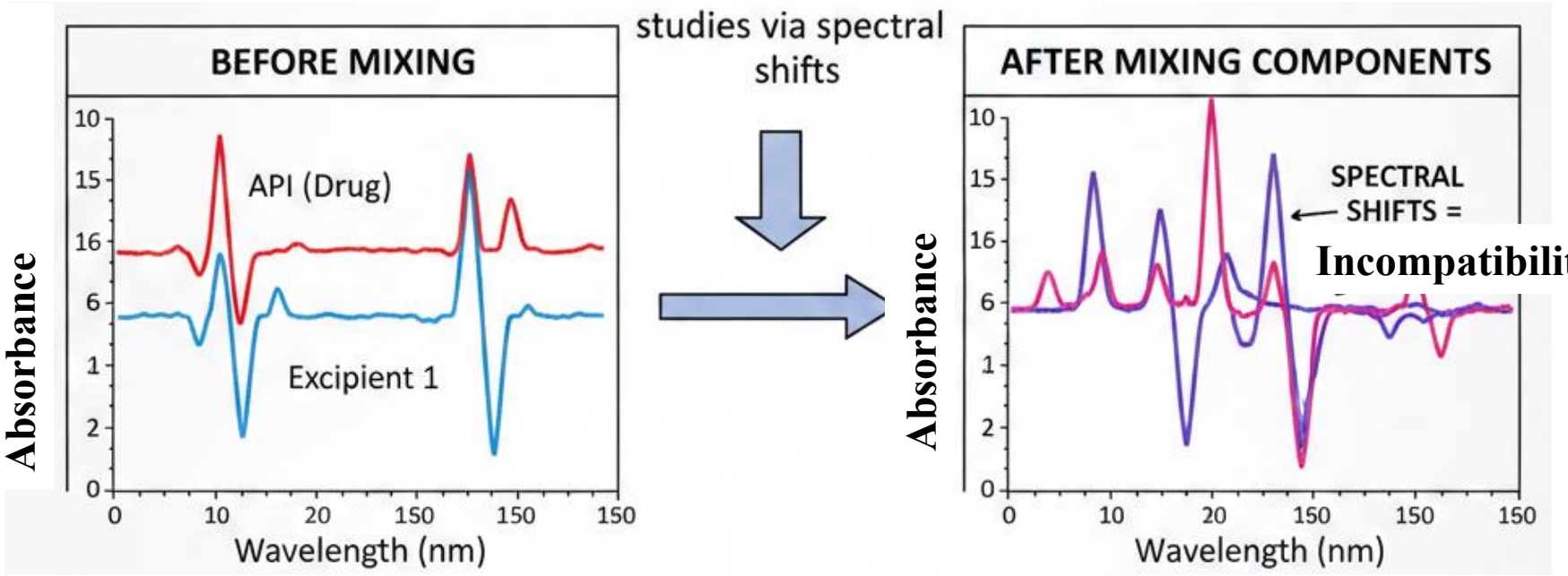


Kinetic Studies of Reactions



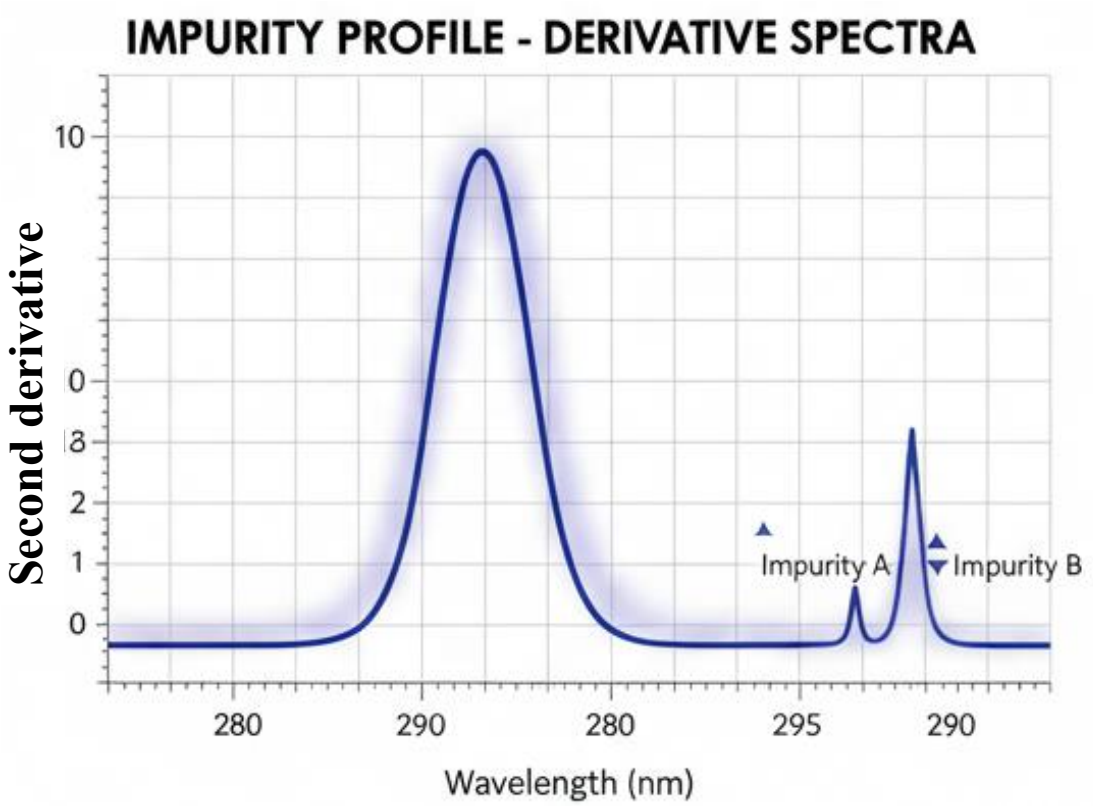
Drug Formulation Development

Method compatibility testing

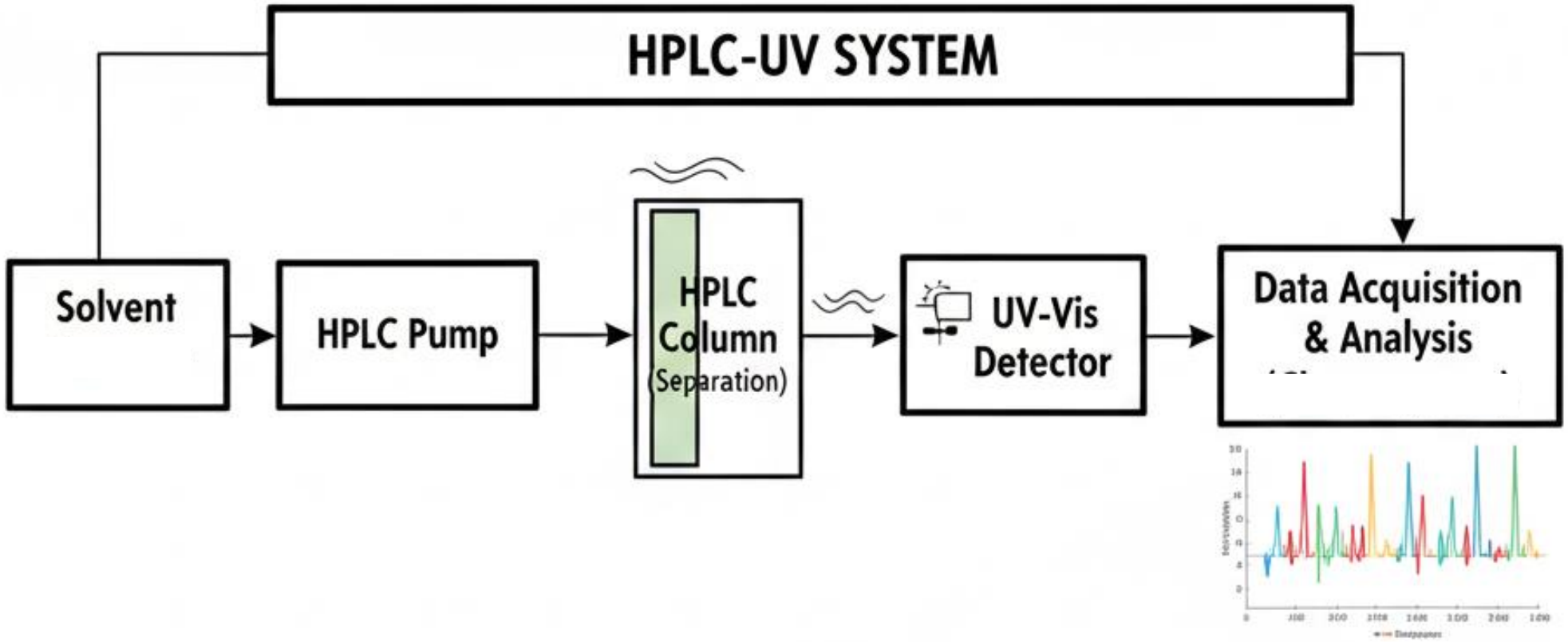


Incompatibility

Impurity Profiling

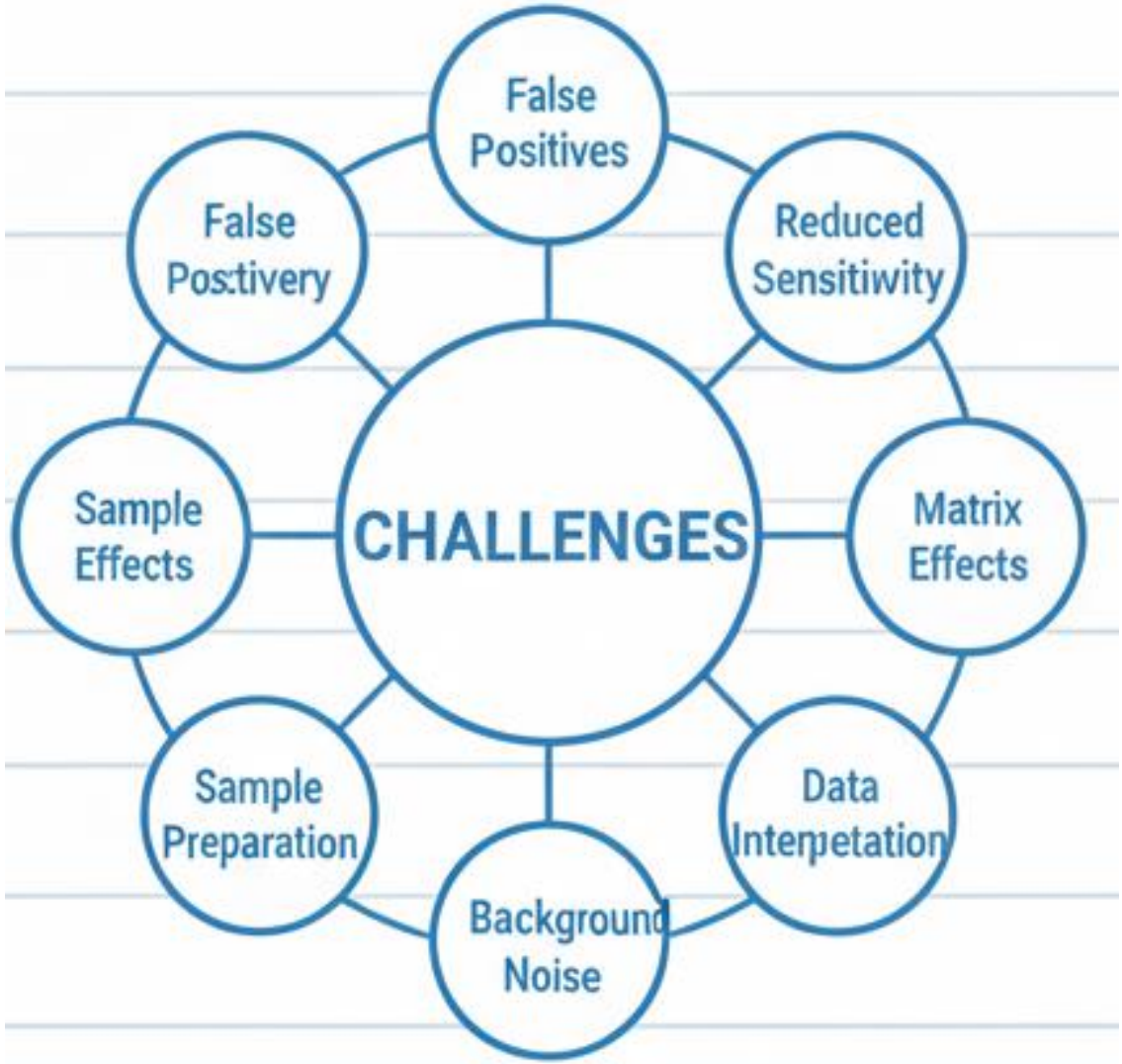


Integration with Other Techniques

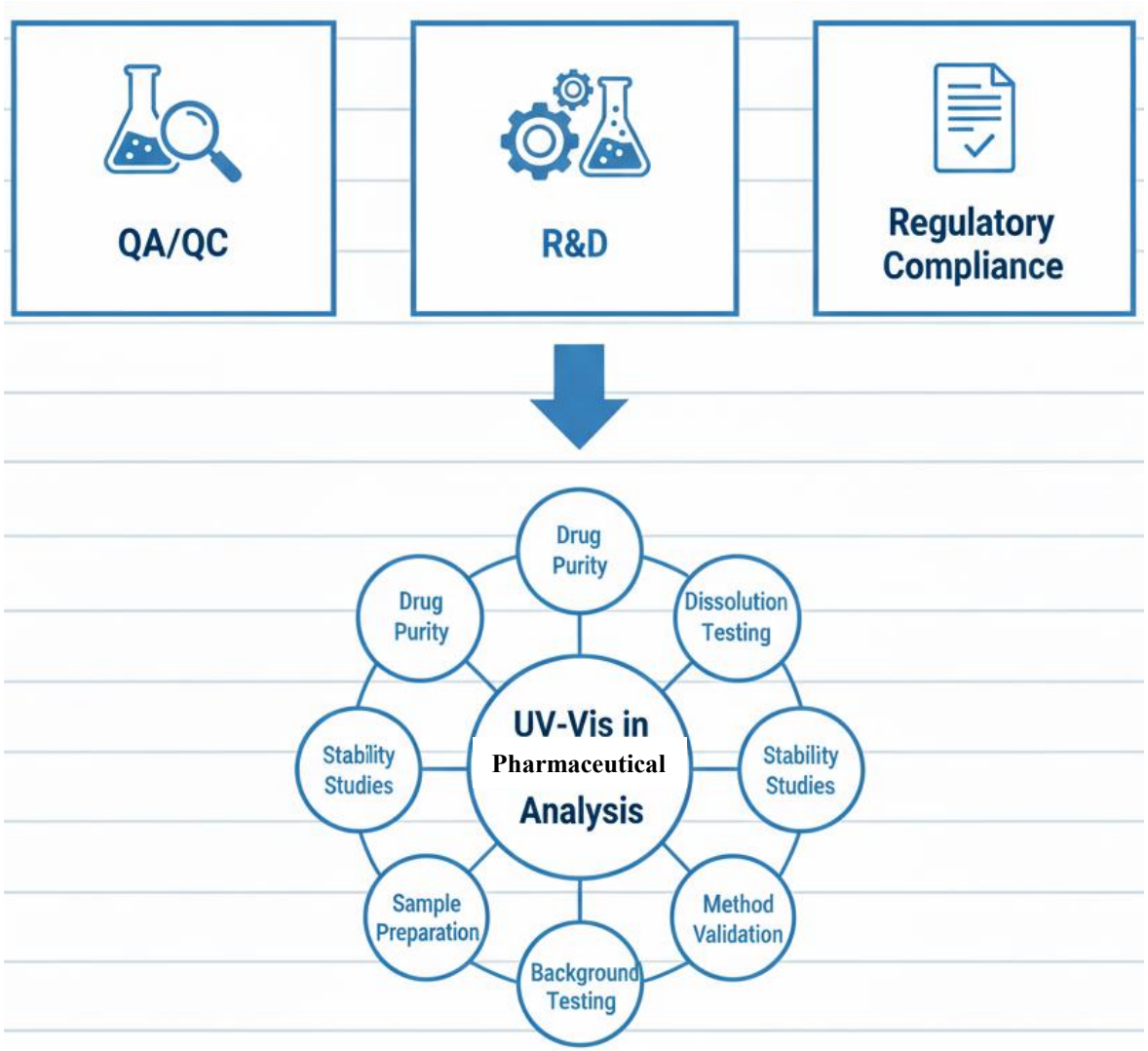


Advantages

Limitations



Summary


QA/QC
R&D
Regulatory Compliance
UV-Vis in Pharmaceutical Analysis
Drug Purity
Dissolution Testing
Stability Studies
Method Validation
Background Testing
Sample Preparation
Stability Studies
Drug Purity

Assessment

1. Which component of a UV-Vis spectrophotometer is responsible for separating light into different wavelengths?

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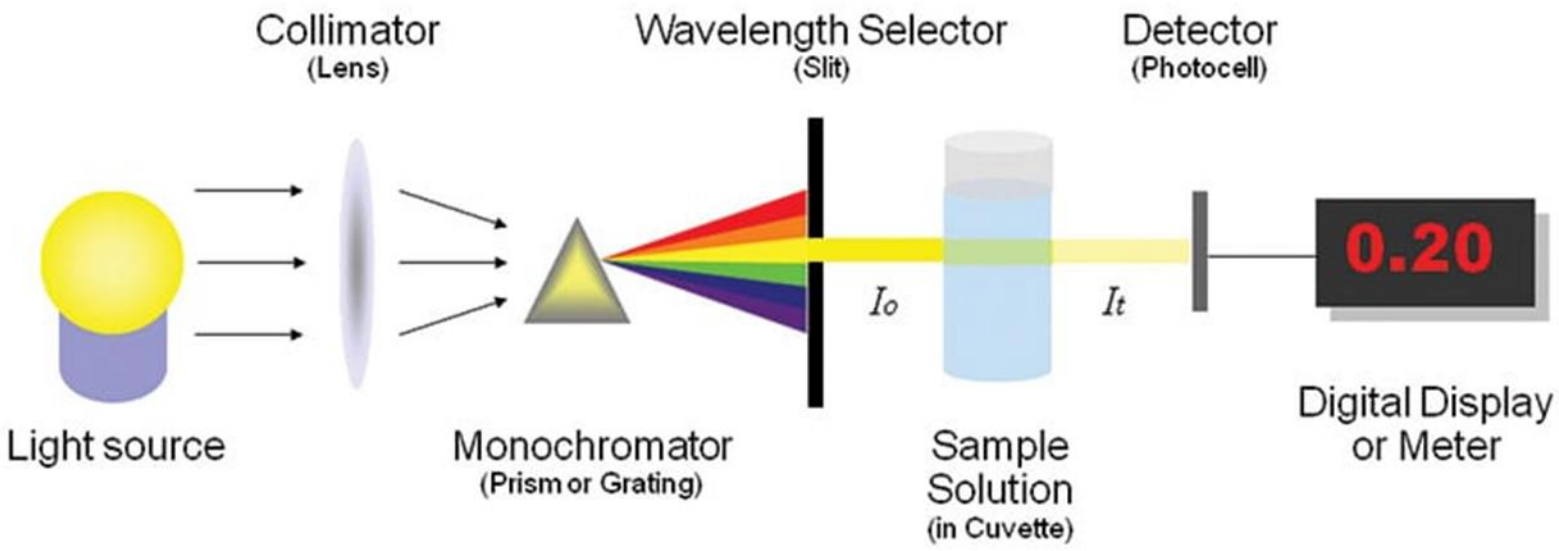

Assessment

2. What is the primary source of radiation used in UV-Visible spectroscopy?

Assessment

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Assessment

3. Which material is preferred for cuvettes when measuring in the UV region?

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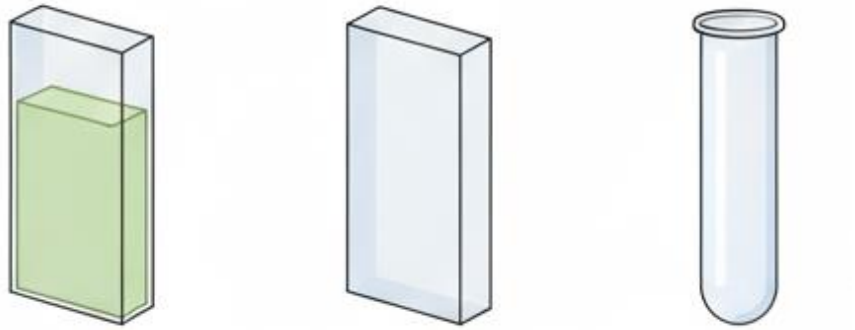

Glass **Quartz** **Plastic**

References

1. Lakowicz JR. Principles of fluorescence spectroscopy. 3rd ed. New York (NY): Springer; 2006.
2. Skoog DA, Holler FJ, Crouch SR. Principles of instrumental analysis. 7th ed. Boston (MA): Cengage Learning; 2018.
3. Guilbault GG, editor. Practical fluorescence. 2nd ed. New York (NY): Marcel Dekker; 1990.
4. Valeur B, Berberan-Santos MN. Molecular fluorescence: principles and applications. 2nd ed. Weinheim (Germany): Wiley-VCH; 2012.


Thank you!