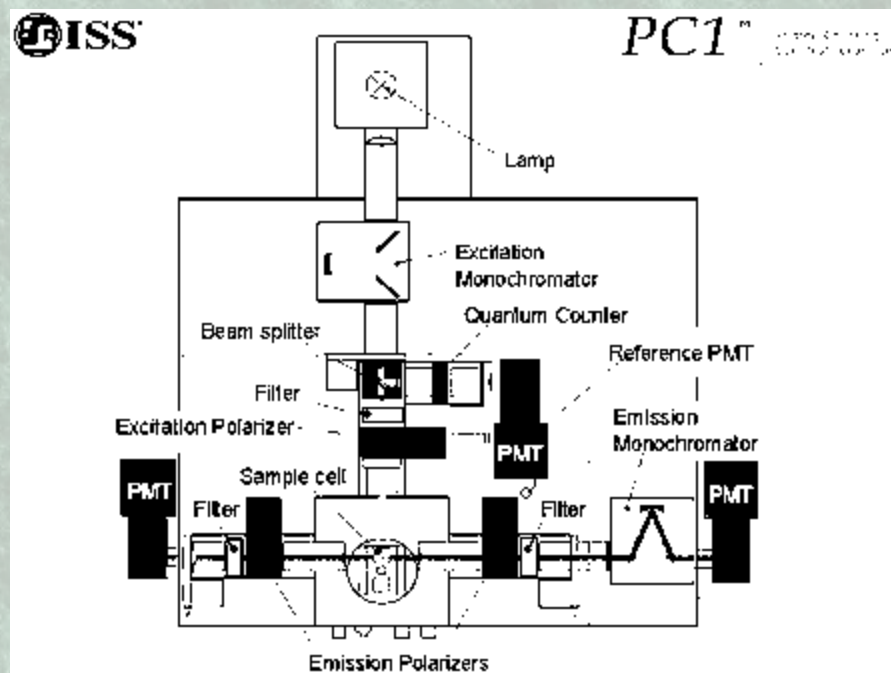


# Fluorescence Spectrophotometer



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- **Fluorescence**

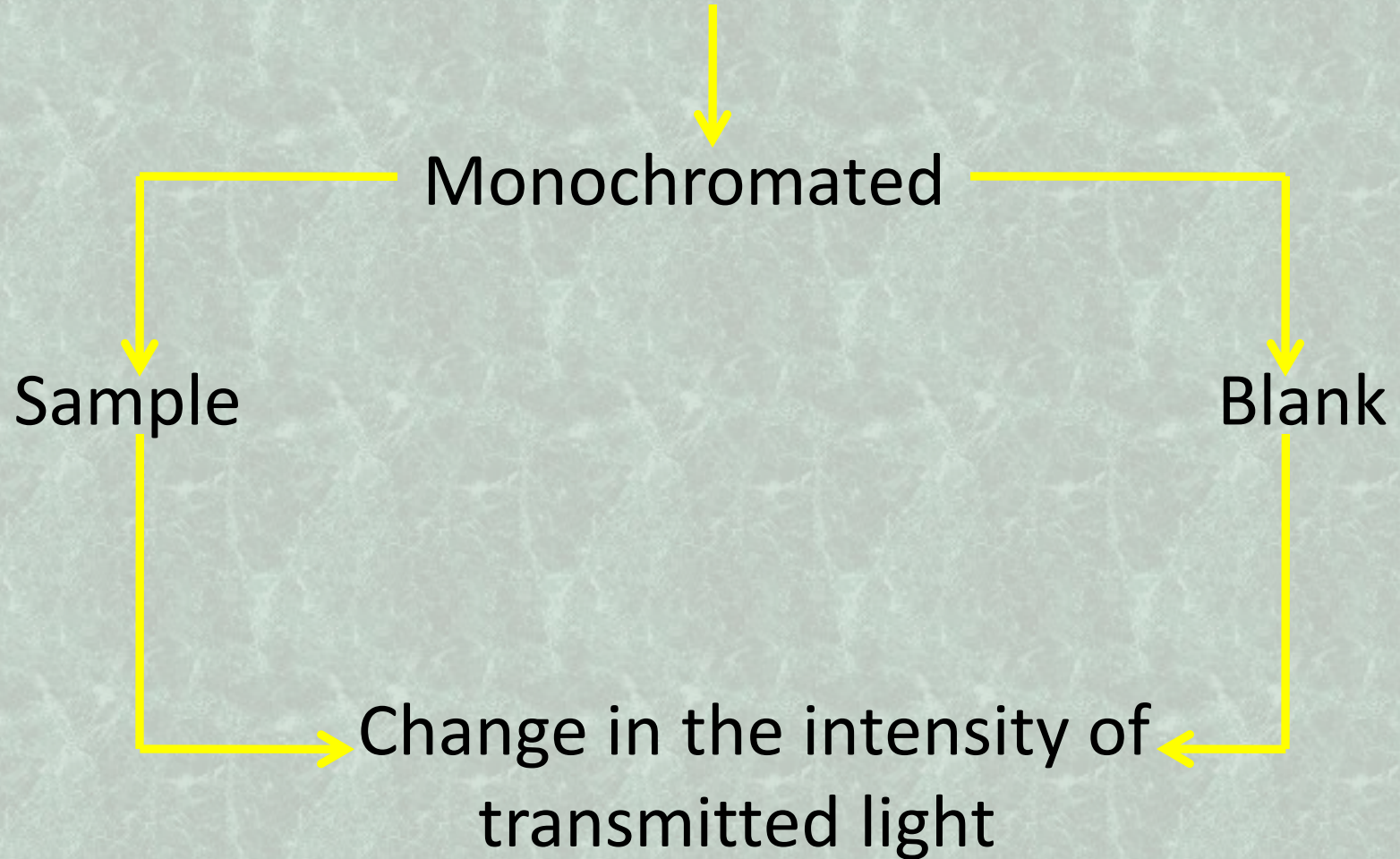
- Light radiation from certain substances
- Property of absorbing invisible light and emitting visible light

# • Spectrophotometer

- Spectrometer : produces colored light of single wavelength using monochromator
- Photometer : measures radiant power of monochromatic light using phototube for detection

# Principle

Radiation from the source

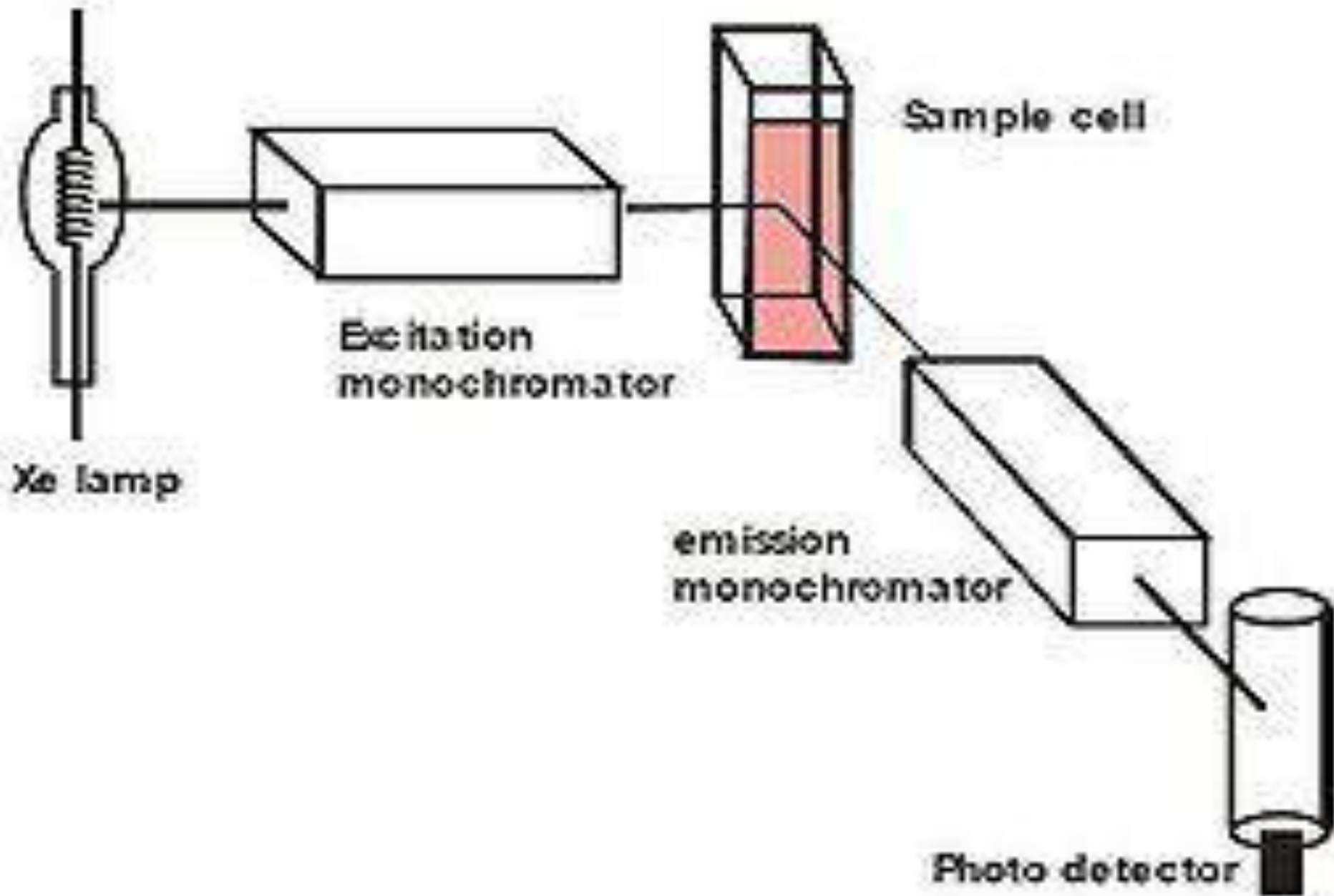


# Parts

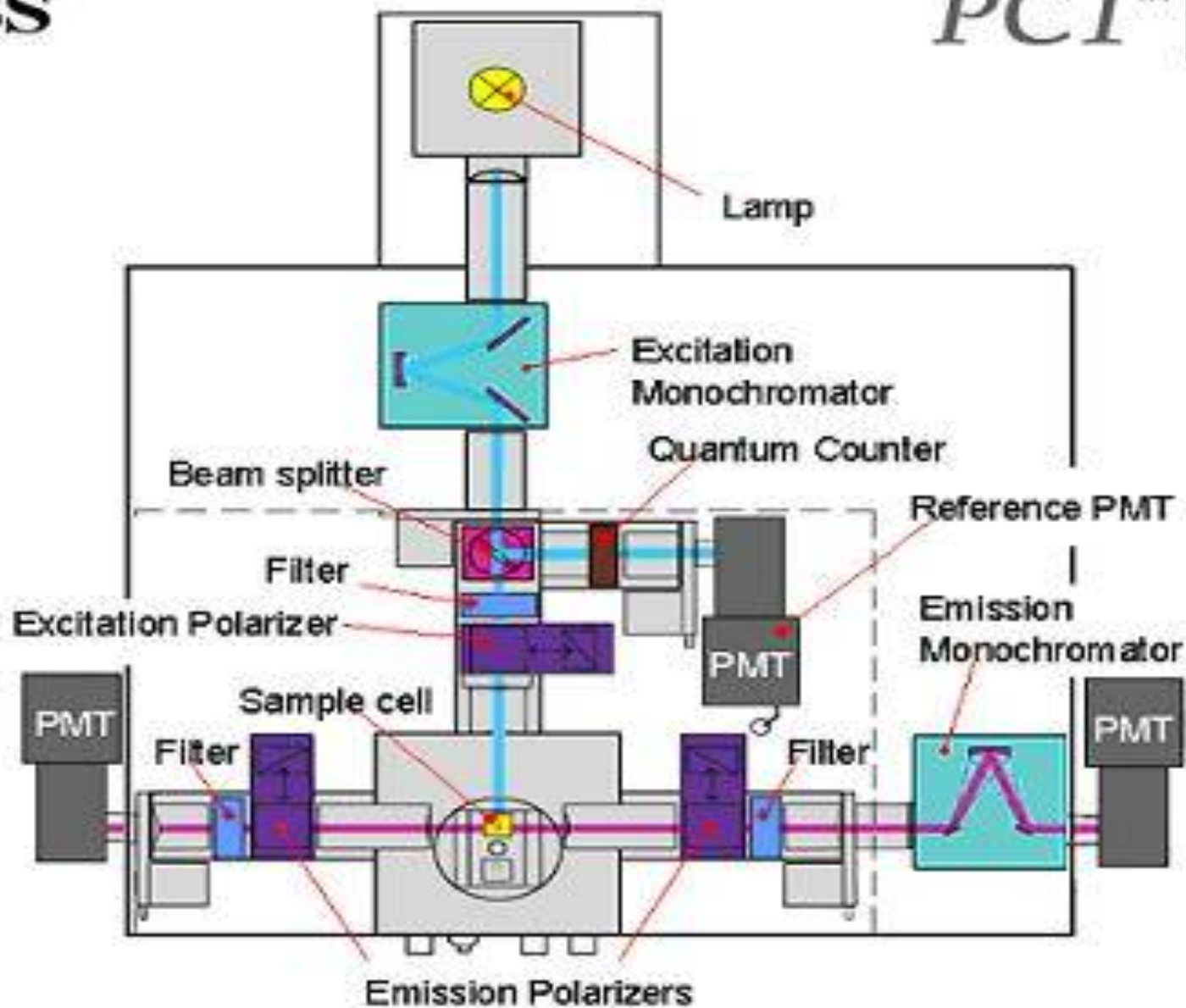
- **Light source**
- **Monochromator**
- **Sample holder**
- **Detector**

- Various light sources used for excitation :
  - Lasers
  - Photodiodes
  - Xenon arcs
  - Mercury – vapour lamps
- A monochromator transmits light of an adjustable wavelength with an adjustable tolerance

- The detector can either be single-channeled or multichanneled
- The single-channeled detector can only detect the intensity of one wavelength at a time
- while the multichanneled detects the intensity at all wavelengths simultaneously







**Working**

The light from the source



monochromator



Sample



A proportion of the incident light is absorbed by the  
sample



some of the molecules in the sample fluorescence

The fluorescent light is emitted in all directions



Some of this fluorescent light passes through a second monochromator



reaches the detector



which is usually placed at  $90^\circ$  to the incident light beam to minimize the risk of transmitted or reflected incident light reaching the detector.

# Application

- Fluorescence spectrophotometer is used in biochemical, medical, and chemical research fields for analyzing organic compounds
- There has also been a report of its use in differentiating malignant, basaloid skin tumours from benign.

***Thank you***