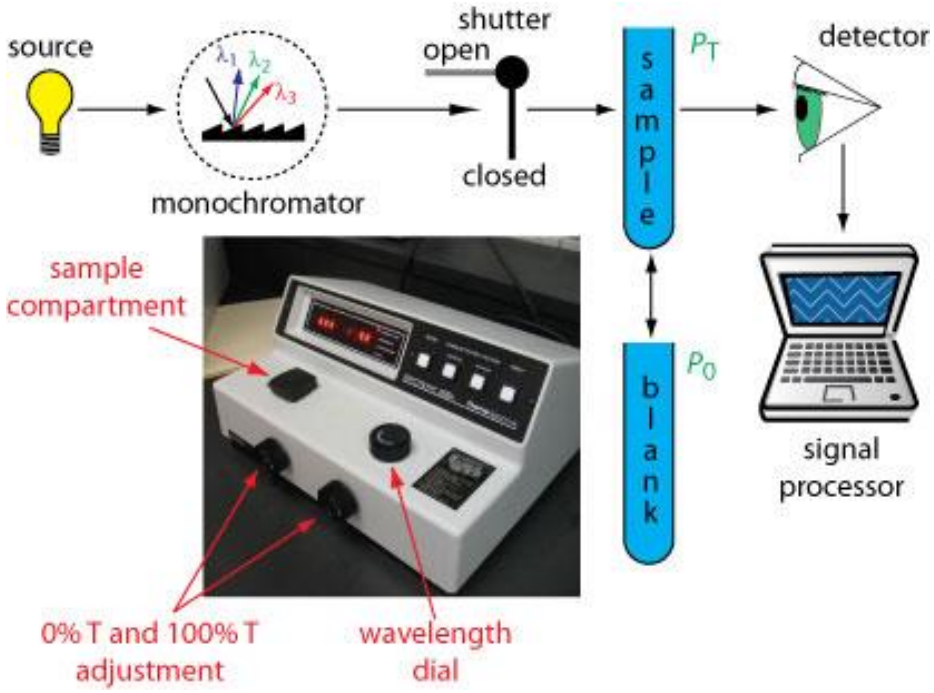
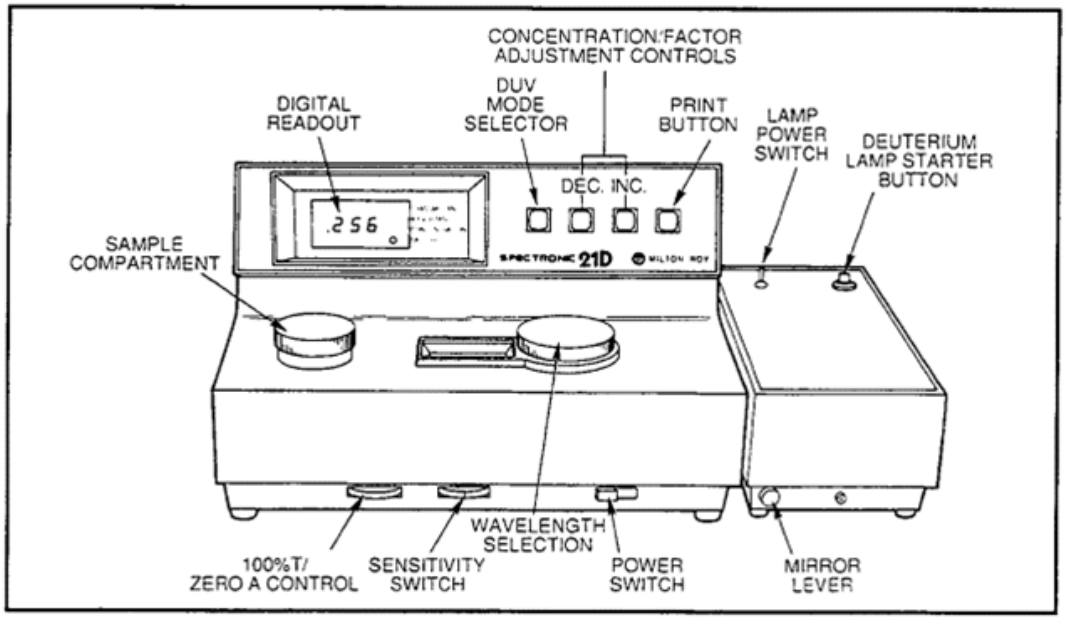
Spectrophotometer



Spectrophotometer : its instrument for measure light intensity which measures light intensity in terms of color (Wavelength).



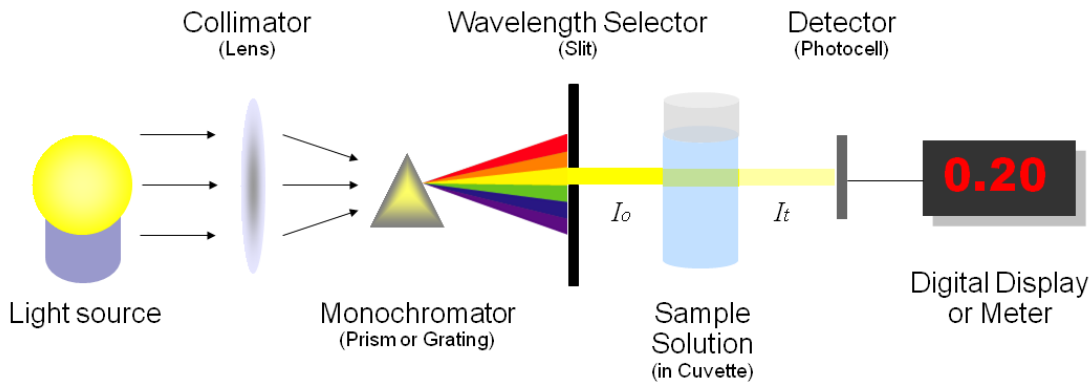
There two used for this spectrophotometer

1-Used for measure light absorption .

2- Used for measure light rebound .

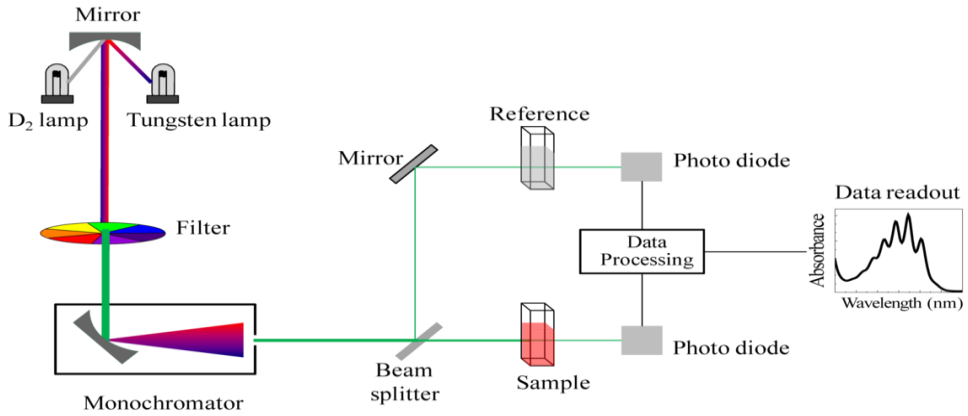
In medical laboratories used the first type any light absorption . There are two types from this instrument .

1-Single beam : measure the absolute intensity of light .



Single beam Spectrophotometer

2- Double beam : measure the percentage of light intensity by two beam different track .



Double beam Spectrophotometer

The first type easier and more stability but second type more use because has a longer range of wavelengths .

Consists spectrophotometer of four main parts .

1-Light source : this part is the main source for radiation in this instrument used (Hollow cathode lamps) (HCL) this type of light source consists of cathode and anode with inert gas (Ergun or neon) in sealed tube .

2- Collimator (lens)

3- Monochromatic : it an important part in spectrophotometer function this part in work instrument separate wavelengths required for different wavelengths by (HCL). Where it to selection required wavelength to examine the sample .

4- Wavelength selector (slit)

5- Cuvette

6- photometer (photocell): after selecting wavelength required by monochromatic where it the light passes through the sample and be on the opposite side a set of detectors for the amount of remaining amount of energy then displays the result on the screen .

Method used spectrophotometer

1-Run instrument and leaves for 15 minutes for heated .

2- Use the key to the wavelength for adjust instrument on the wavelength required used .

3- Close the cover where placed the sample and used key (zero control) to adjust the gauge .

4- Adjust the gauge on (Transmittance 0%) this process is done without putting a sample in instrument where the path is closed the photometer does not record anything .

5- putting tube containing the reference solution in the space close the cover and used key control of light where the absorption index of the spectrum becomes zero.

6- Get out reference sample , put the sample to be examined and close the cover then read absorption .

Some important notes

*Take a blood sample from the patient put in centrifuge for separation blood components and get a plasma .

* Mixing the limiting factor with serum interaction produces cause the movement of molecules or change in color. The color vary depending on the type of tests .

Maintenance

1-Change the light source .

2- Cleaning lenses and mirrors and optical lanes .

3- Must keep the lens from dust and touch because this change the outcome .

4- Lenses and mirrors sensitive very must be treated with caution .