



SPECTROPHOTOMETER

SUPERVISOR :

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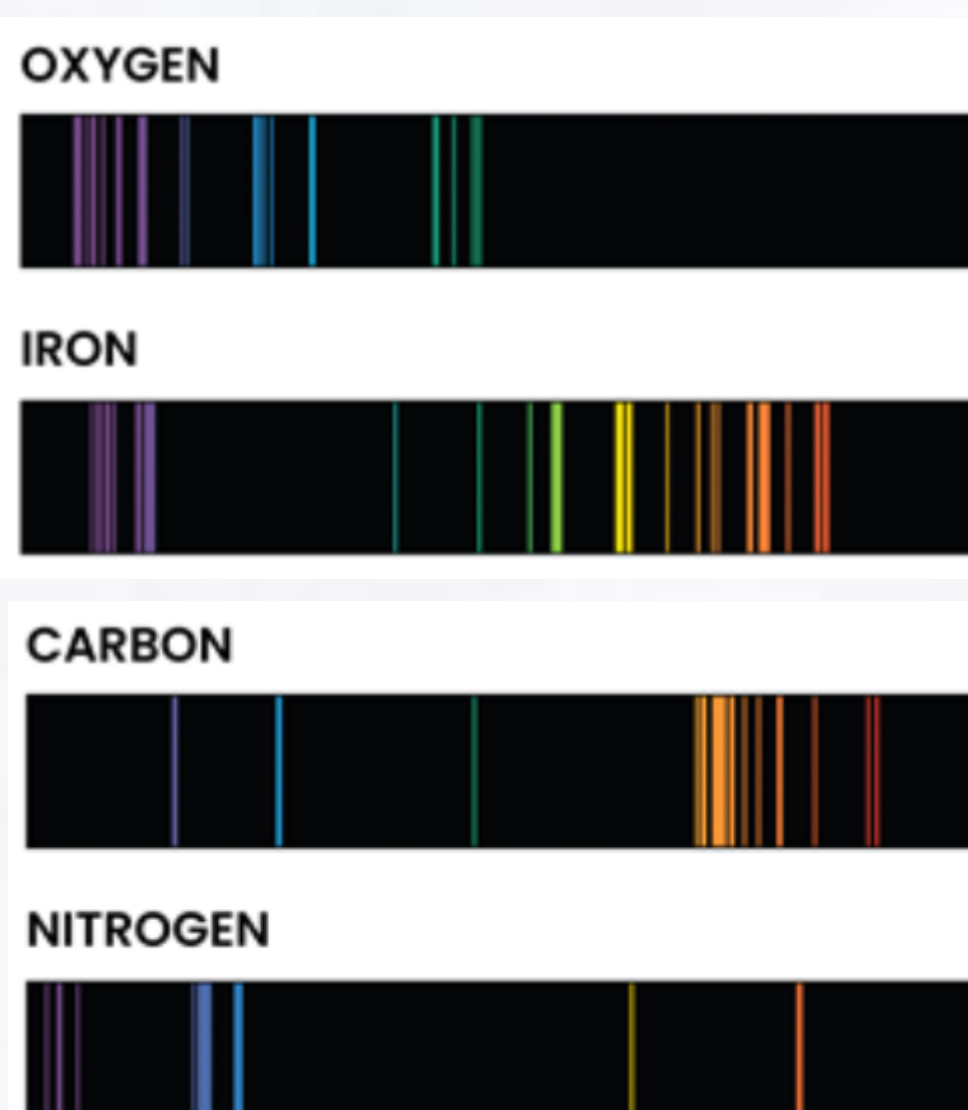
GROUP :

Abdul Ghani, et al.

INTRODUCTION :

A spectrophotometer is an instrument that measures the amount of photons (the intensity of light) absorbed after it passes through sample solution.

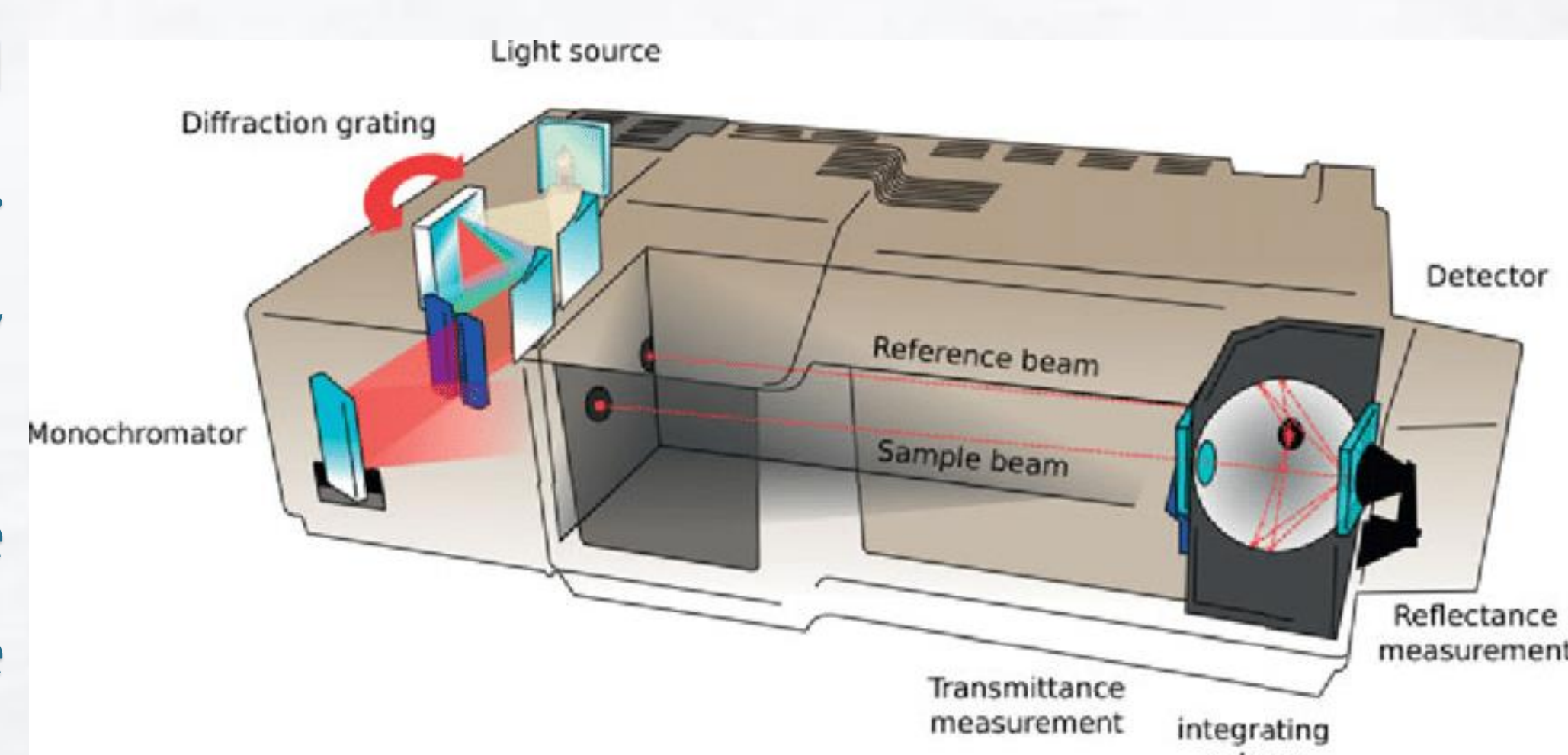
It calculates the amount of chemical substance (concentrations) by measuring the intensity of light detected. Depending on the range of wavelength of light source.



OPERATION :

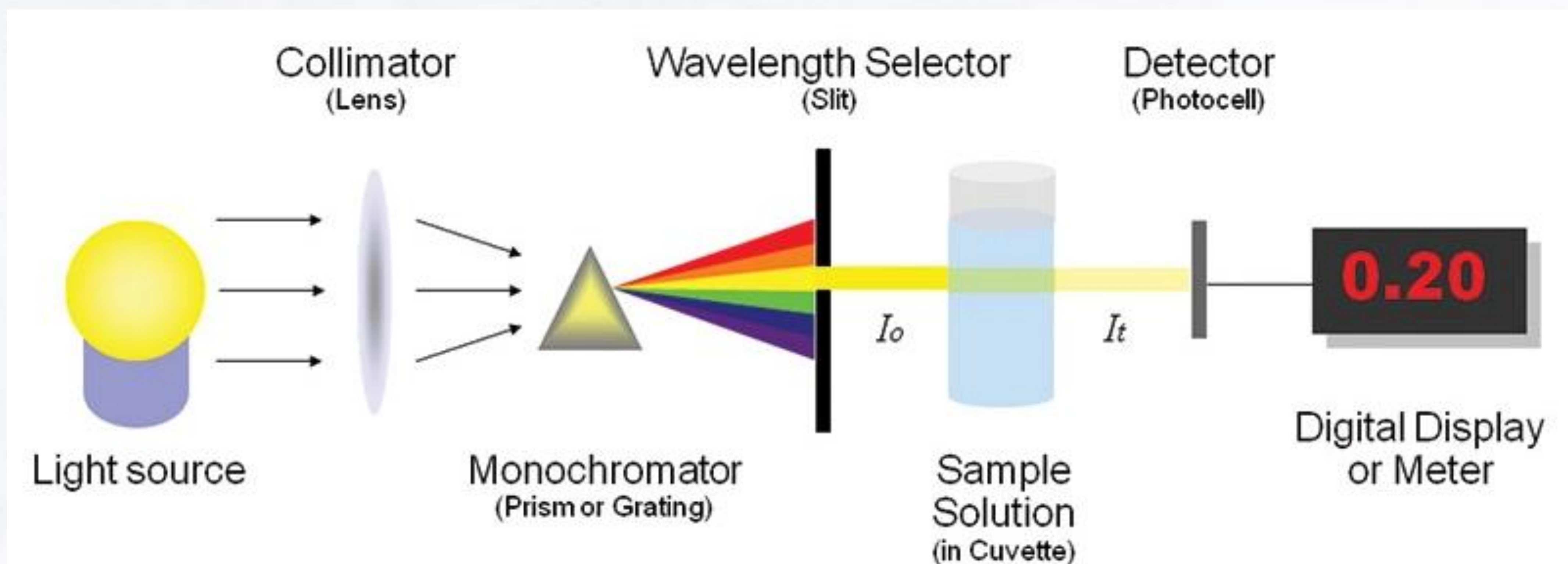
Single beam spectrophotometers are cost-effective and have the potential to perform better, as they do not need to expend energy splitting the beam. However, these devices are less stable. Moreover, they require more work, as users must provide a reference to standardize the device before using it.

Double beam spectrophotometers compare the light intensity of the spectrum from a sample to a reference beam. Applications that require stability, speed, and automation rely on double beam spectrophotometers and are expensive.



COMPONENTS :

It consists of a light source, a monochromator, a sample chamber containing a cuvette, a detector (such as a photomultiplier tube or photodiode) to detect the transmitted light, a digital display, and a data analysis software package.



APPLICATIONS :

- Quantifying concentrations of compounds
- Determining the structure of a compound
- Finding functional groups in chemicals
- Determining the molecular weight of compounds
- Determining the composition of materials

USES :

- Food science
- Biochemistry research
- Medical diagnostics
- Forensic science
- Water and air analysis
- Industrial applications