



# L&BROTORY INSTUMENT&TION &ND TECHNIQUES

## BY

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## LECTURE TWELEVE PHOTOMETERY

#### Photometry Visible light spect

### Visible light spectrum

When a beam of light passes through a colored solution, it interacts with matters in the solution and the result may be refraction, reflection, absorption and transmission among others

### -Refraction: Is defined as sudden change in the

direction of the beam when the light passes from one

medium to other with a different physical density.

#### Reflection: Is a condition where the beam returns-

. back towards its source such as mirror

## Absorption : Is a situation where some components of .the light (colors) are retained or absorbed

**Transmission:** Refers to the situations where some portions of the light permitted to pass through a given medium

Radiation is characterized by waves on which basis the electromagnetic radiation spectrum could be divided in many regions including gamma rays, x-rays, ultraviolet rays, visible light, infrared, microwaves and radio waves . visible region is the radiant energy to which the human eye responds and their wavelength varies between 400 and 700 nm Wavelength of about 700 nm are seen by the eyes as red colors while those of progressively shorter wavelengths give in descending order to orange, yellow, green, blue, indigo and finally violet colors which is produced in the short wavelength of 400nm





#### Photometer

It is instrument measure the absorbance optical density

. This equipment will measure the transmission and optical density depending on color filter which give the complement color and in this case the reading less accurate than spectrophotometer which is use Monochrometer

#### :Parts of photometer

1-Light source

2- Filter : to give approximate wave length according to the color

.3- Sample holder: which can hold the sample

**4-Photocell :** it will convert the light to electrical current

**5-Galvanometer :** which can measure the current from

.photocell

6-Zero adjustment : which can adjust the zero point and reading Types of filter

1-Blue filter : it will pass the wavelength between ( 400 – 495 ) nm

2-Green filter : it will pass the wavelength between( 500 – 580 ) nm

3-Red filter : it will pass the wavelength between ( 600 – 800 ) nm

