

colorimeter

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INTRODUCTION

Colorimeter is instrument which is used in the measurement of the luminous intensity of light.

Invented by Louis Jules **Duboscq** in 1870.



COLORIMETER

- ❑ It is the most common analytical technique used in biochemical estimation in clinical laboratory
- ❑ It involves the quantitative estimation of color
- ❑ A substance to be estimated colometrically, must be colored or capable of forming chromogens (colored complexes) through the addition of reagents.
- ❑ The color of light is the function of its wavelength

COLORIMETER PRINCIPLE

When a monochromatic light passes through a coloured solution, some specific wavelengths of light are absorbed which is related to colour intensity.

The amount of light absorbed or transmitted by a colour solution is in accordance with two law i.e. Beer's & Lambert's Law.



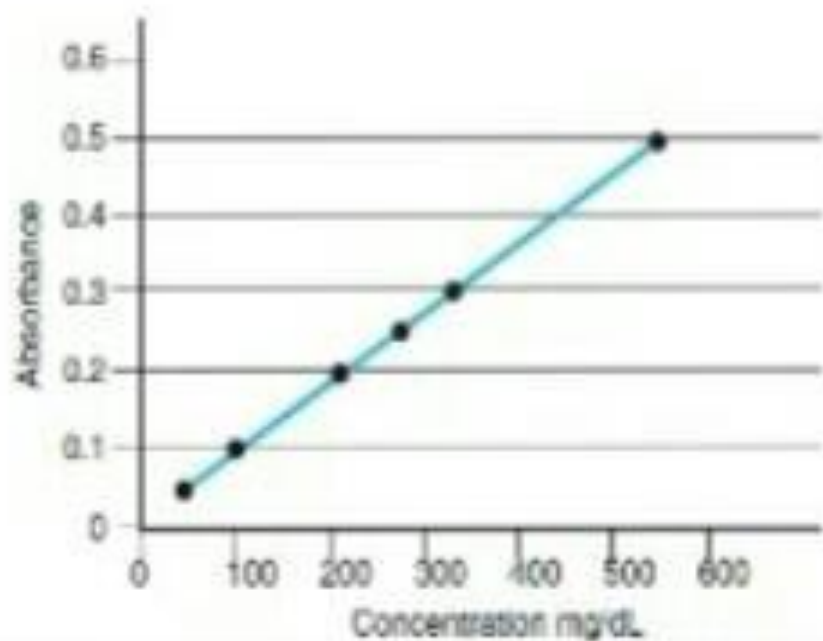
LAMBERT'S LAW

- When a ray of monochromatic light passes through an absorbing medium its intensity decreases exponentially as the length of the light path through light absorbing material increases



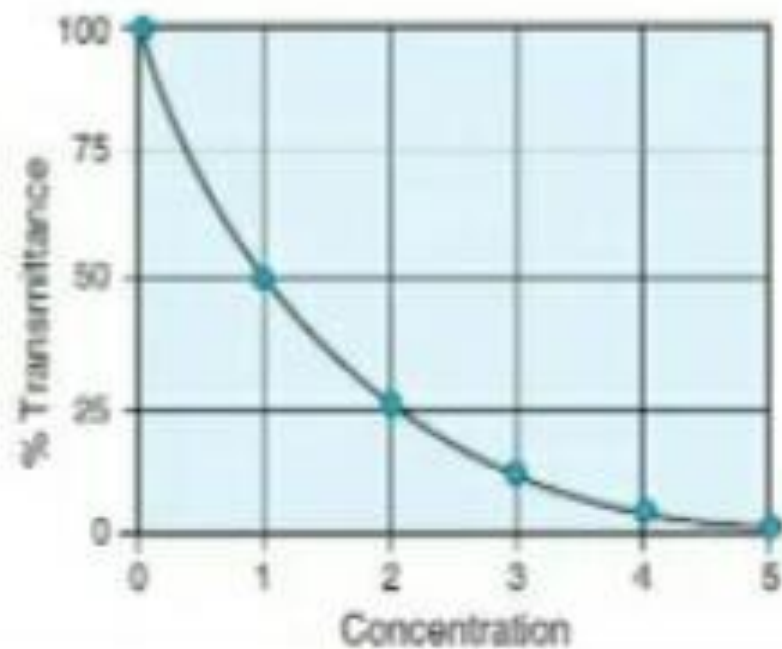
BEER'S LAW

- The concentration of a substance is directly proportional to the amount of light absorbed or inversely proportional to the logarithm of the transmitted light



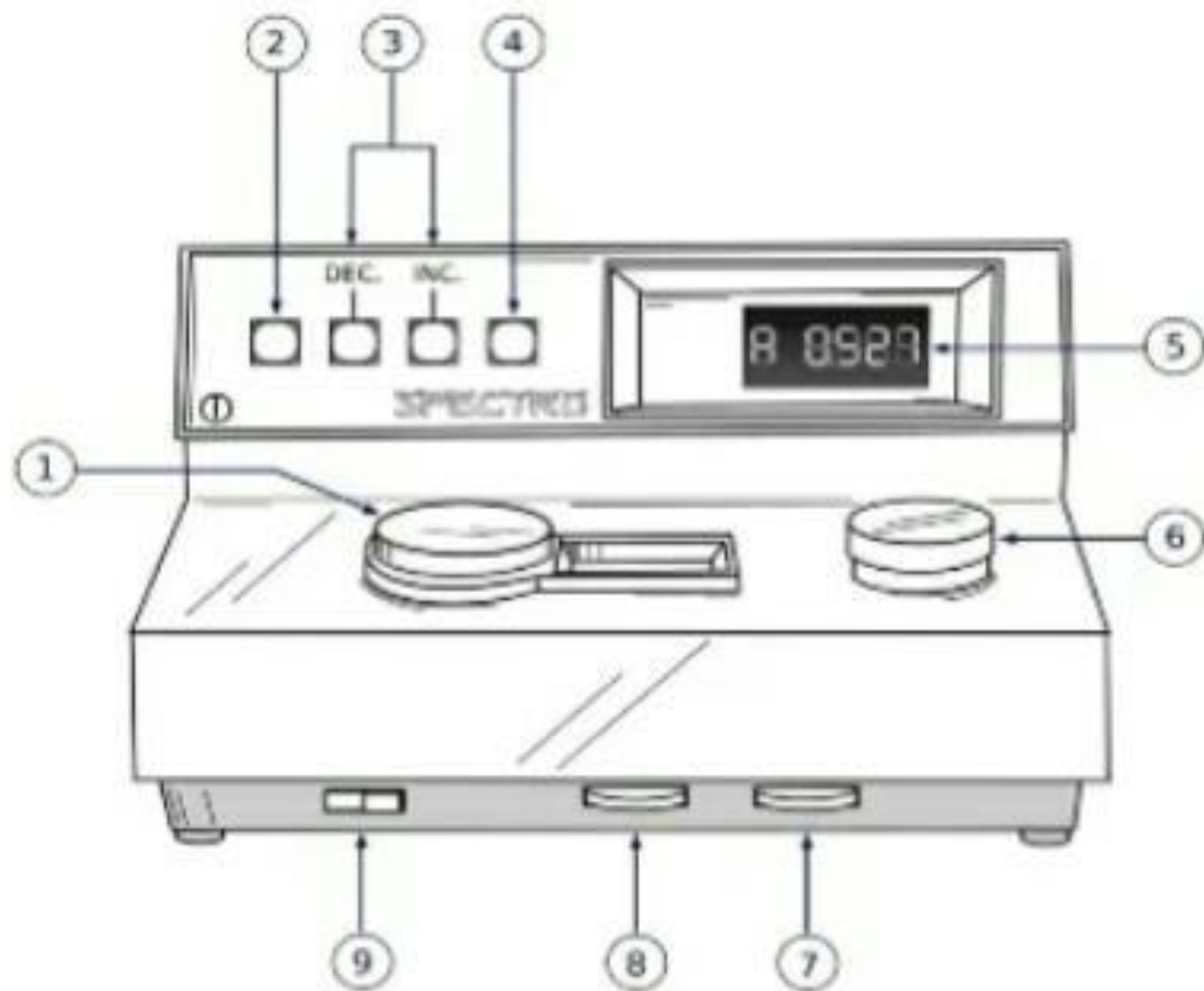
Beer's law

Beer's law

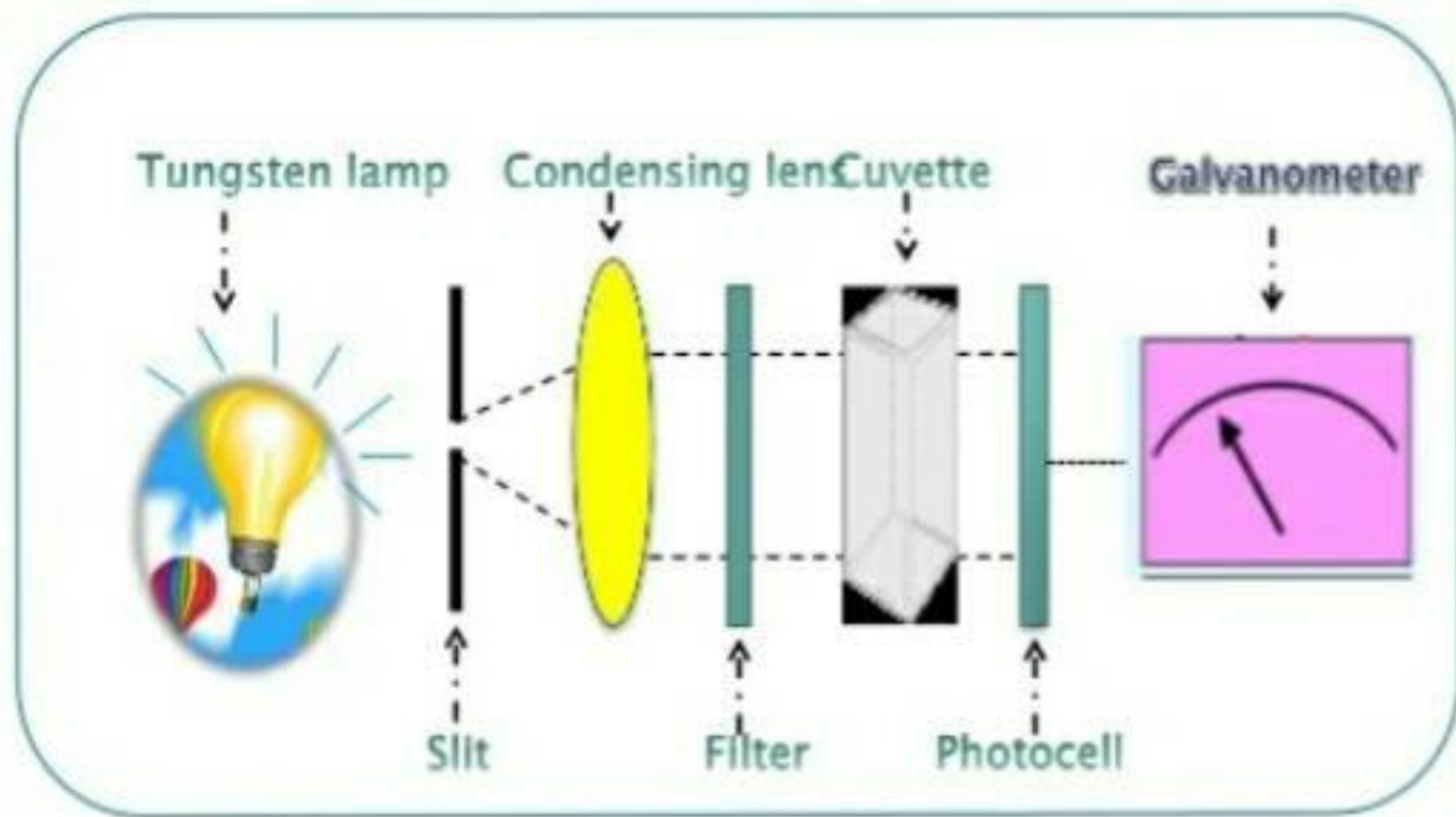


PARTS OF A COLORIMETER

- (1) Wavelength selection,
- (2) Printer button
- (3) Concentration factor adjustment,
- (4) UV mode selector (Deuterium lamp)
- (5) Readout
- (6) Sample compartment
- (7) Zero control (100% T),
- (8) Sensitivity switch



COMPONENTS OF A COLORIMETER



COLORIMETER

Advantages

- ✓ It is inexpensive .
- ✓ Very well applicable for quantitative analysis of colored compounds.
- ✓ Easily carried and transportable.

COLORIMETER

Disadvantages

- ✓ Cannot be used for colorless compounds.
- ✓ It does not work in UV and IR regions.
- ✓ We cannot set specific wavelength, as we have to set a range as a parameter.
- ✓ Similar colors from interfering substances can produce errors in results .

Thank you