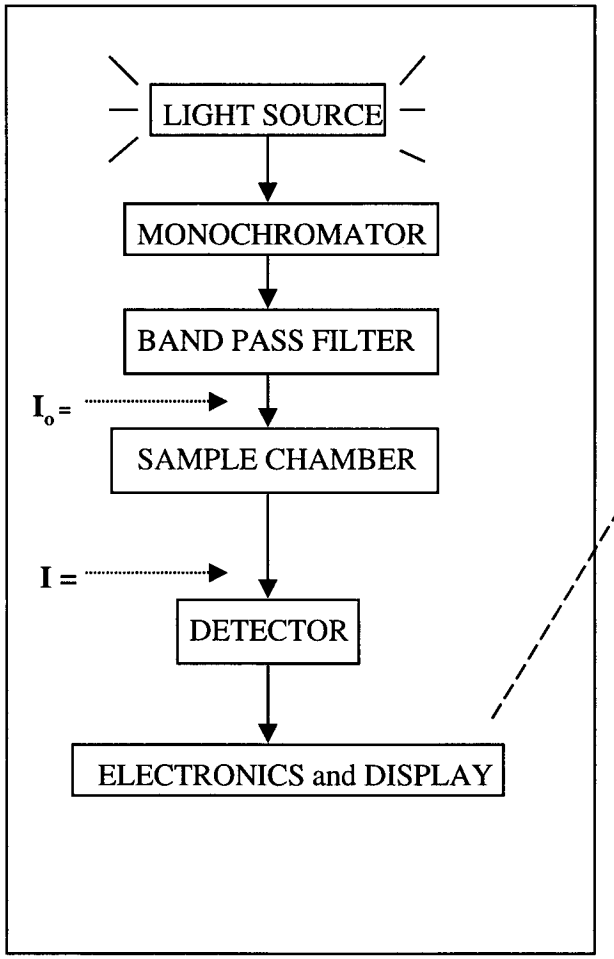
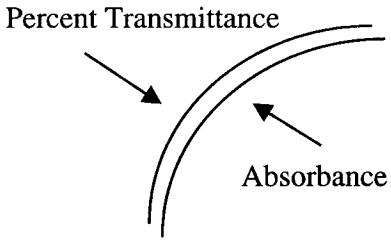


" SPEC 20"



The **DISPLAY** on the "Spec 20" consists of two scales: the scale on top is percent **Transmittance;** the scale on the bottom is **Absorbance**.

TRANSMITTANCE (T) is defined as

$$T = \frac{I}{I_o}$$

where **I** is the amount of radiant energy (light) transmitted by the sample and $\mathbf{I_o}$ is the amount of radiant energy (light) that illuminates the sample. The transmittance scale is arithmetic. A Transmittance value tells how much light passes through the sample.

An **ABSORBANCE (A)** value tells how much light is retained (or absorbed) by the sample. The Absorbance scale is logarithmic because Absorbance and Transmittance are related by the following equation:

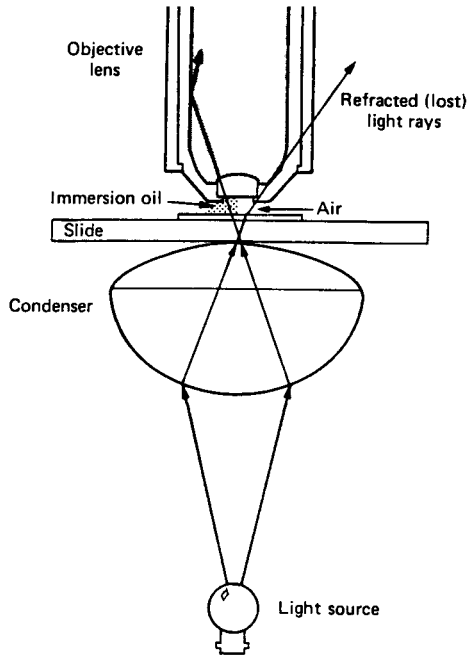
$$A = -\log T$$

APPENDIX B: OIL IMMERSION MICROSCOPY

The oil immersion lens derives its name from the fact that a special mineral oil is interposed between the lens and the microscope slide. The oil is used because it has the same refractive index as glass, which prevents the loss of light due to the bending of light rays as they pass through air. The use of oil in this way enhances the resolving power of the microscope.

With parfocal optics, one can go to the oil immersion (100X) objective from the high-dry (40X) objective without fear of contact between the lens and the slide:

1. First bring the specimen into focus at low magnification.
2. Then, switch to 40X, center the specimen and bring it into focus. Rotate the 40X objective away from the light path.
3. Before rotating the oil immersion lens into position, place a drop of immersion oil on the coverslip.
4. When using the oil immersion lens, it is best to open the iris diaphragm as much as possible. Closing the diaphragm tends to limit the resolving power of the optics. In addition, the condenser must be kept at its highest point.
5. When you are finished with the oil immersion objective, clean it carefully with **lens paper** – *never* use Kimwipes.



Refractive index in air and mineral oil

APPENDIX C: DNA MARKER FRAGMENTS

The size of each marker fragment is given in kilobase pairs (Kbp).

** Bacteriophage λ, digested with *Hind*III:

23.2	
9.4	
6.6	
4.4	
2.3	
2.0	
0.5	(not detectable in this gel system)

** Bacteriophage ΦX 174, digested with *Hae*III:

1.35
1.08
0.87
0.60

The remaining fragments are too small to resolve with this gel system)

This page intentionally left blank. Use for notes.