Light sources

The most important light source is the Sun. (6000 K)
Maximum is close to the highest sensitivity of vision.

Tungsten has high melting point (3000 K). Halogen content reduces the evaporation of metal.

Light sources based on luminescence

Metal vapour (e.g. Hg) lamps

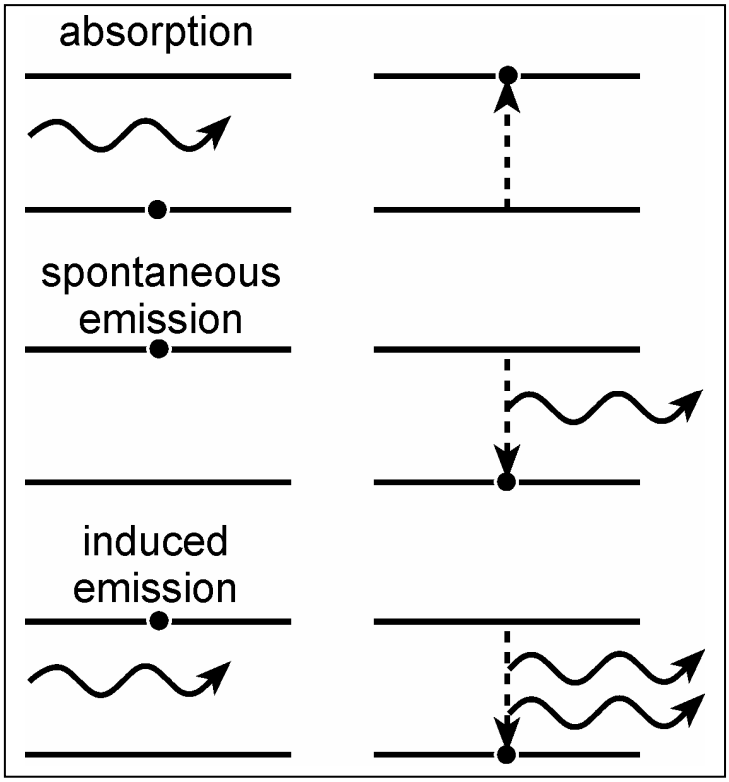
low pressure mercury lamp with emission in the UV (254 nm) absorption maximum of DNA photochemical degradation of genetic material (in bacteria).

Thin layer coating on the wall to produce fluorescence when excited by UV light

Light Emitting Diodes: **LED**

Lasers

Light
Amplification by the
Stimulated
Emission of
Radiation



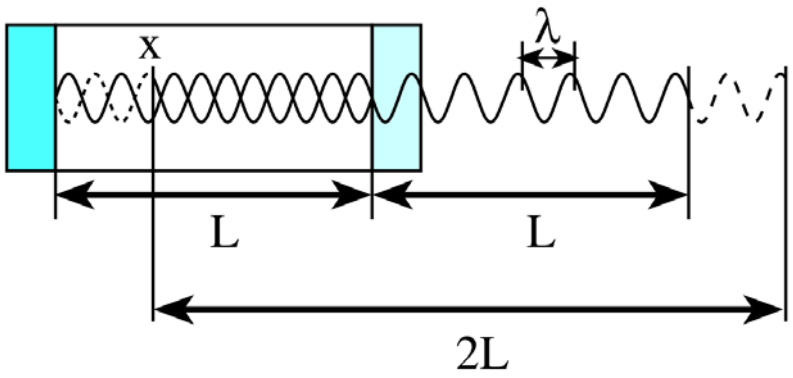
Light amplification

$\mu = K(N_1\text{-}N_2)$

Population inversion ($N_1 < N_2$)

Conditions for LASER operation

1. proper material (electronic excited state of metastable character)
   - at least 3 energy level materials
2. intensive excitation of electrons or pumping
3. positive feedback
4. optical resonator (standing waves)



Properties of laser light:

1. monochromatic ("single wavelength")
2. coherent (synchronized phase of light)
3. collimated (parallel nature of the beam)
4. high intensity (refers to the power of the laser per unit area)