Photoelectric effect

When a metal surface is exposed to a (monochromatic) electromagnetic wave of short wavelength (and high frequency), the initial radiation is absorbed and the exposed surface emit electrons. This phenomenon is called the photoelectric effect.

The electrons that are emitted in this process are called photoelectrons.

The target of the light from which the electrons are emitted is the photoelectrode and it is the anode. Photoelectrons are collecteddat the cathode, therefore otherwise called cathode rays.

The potential difference between the electrodes can be increased or decreased, or its polarity can be reversed.

The electrons are enclosed in an evacuated glass tube so that photoelectrons do not lose their kinetic energy on collisions with air molecules in the space between electrodes.

E = hf

E = KE + work-function

hf = KE + w

f\_c = Threshold frequecy

frequency at which KE = 0

KE = E – w

Energy required to remove an electron from its nth state is

z = atomic number

n = nth state