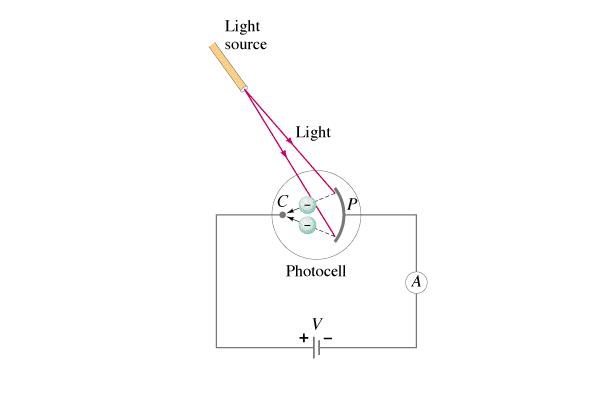
**Noteguide for Photo-Electric Effect - Videos 27EFG Name**

**27EF: Photo-Electric Effect** – Electrons being ejected from a metal by light.

Photon Energy = Work + Kinetic Energy

hf = φ + Emax

hf = hfo + eV

φ - Work function (Depends on material)

fo - Lowest frequency that ejects

e - Electron charge

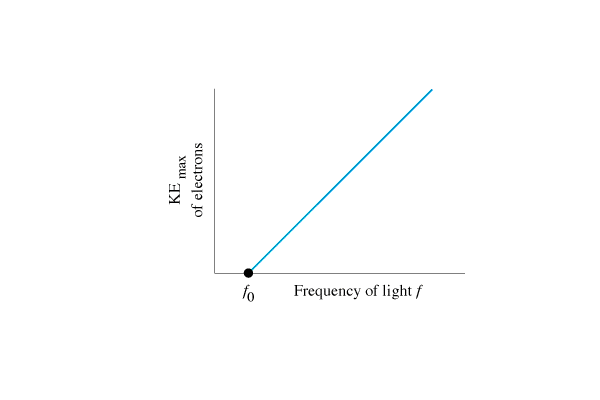
V - The uh stopping potential

Example 1: A certain metal has a work function of 3.25 eV. When light of an unknown wavelength strikes it, the electrons have a stopping potential of 7.35 V. What is the wavelength of the light?

Example 2: 70.9 nm light strikes a metal with a work function of 5.10 eV. What is the maximum kinetic energy of the ejected photons in eV? What is the stopping potential?

Whiteboards:

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| --- | --- |
| 1. Photons of a certain energy strike a metal with a work function of 2.15 eV. The ejected electrons have a kinetic energy of 3.85 eV. (A stopping potential of 3.85 V) What is the energy of the incoming photons in eV? (6.00 eV) | 2. Another metal has a work function of 3.46 eV. What is the wavelength of light that ejects electrons with a stopping potential of 5.00 V?  (147 nm) |
| 3. 112 nm light strikes a metal with a work function of 4.41 eV. What is the stopping potential of the ejected electrons? (6.67 V) | 4. 256 nm light strikes a metal and the ejected electrons have a stopping potential of 1.15 V. What is the work function of the metal in eV?  (3.70 eV) |

**27G:** Data:

Photon Theory Predicts:

Wave Theory Predicts: