

## Vocabulary: Photoelectric Effect

### Vocabulary

- Electron volt – a unit of energy that is equal to the energy of an electron that is accelerated by a potential difference of 1 volt.
  - Electron volts are also used to describe the energy of *photons*.
- Frequency – the number of times something happens in a given period of time.
  - The frequency of a wave, measured in *hertz* (Hz), is equal to the number of wave crests that pass a point each second.
  - The frequency of a light wave is equal to the speed of light (*c*) divided by its *wavelength* ( $\lambda$ ):

$$f = \frac{c}{\lambda}$$

- Intensity – a measure of how much energy passes through a region in a given time.
  - The brighter a light source is, the greater its intensity.
  - As the intensity of a light source increases, the number of emitted photons increases as well.
- Photoelectric effect – the emission of electrons from the surface of a material when struck by electromagnetic radiation.
- Photon – the smallest possible amount of light; a *quantum* of light.
  - A photon can behave as a discrete particle or as a wave.
  - Photons are distinguished by their wavelengths. The shorter the wavelength, the greater the energy a photon carries.
- Voltage – a measure of the strength of an electrical field.
  - Voltage is measured in *volts* (V).
  - In equations, the symbol for voltage is *V*.
- Wavelength – the distance between consecutive crests or troughs of a wave.
  - Different forms of electromagnetic radiation are distinguished by their wavelength.
  - Visible light has wavelengths between 380 and 730 nanometers (nm).
- Work function – the minimum energy required to remove an electron from a solid.
  - The work function should not be confused with the *ionization energy* of an atom. Ionization energy refers to the energy required to remove an electron from a single atom in a gas.