



The energy supplied by light or other electromagnetic radiation takes the form of photons of energy,  $hf$ . When a photon goes into the metal it is wholly absorbed by a single electron.

If	$hf$	$W$		no electron emission
If	$hf$	$W$	$hf_0$	then the photon is just able to release an electron from its surface without it having any $E_k$ ( $f_0$ or THRESHOLD FREQUENCY). ( $hf = W = hf_0$ )
If	$hf$	$W$		then excess energy is given to the freed electron as $E_k$ .

Name and describe the effect shown in the diagram

State appropriate relationship to solve problems involving the frequency and energy of a photon.

What is the threshold frequency?

Insert  $>$ ,  $<$  or  $=$  into the terms in the left hand column to satisfy the result in the right hand column

An electron is accelerated from rest through a potential difference of 200V.

What is the photoelectric effect evidence of?

**Wave-particle duality**

What is the definition for the work function?

Complete the conclusions below

What is the charge of an electron?

What is the work function?

The relationship including velocity, frequency and wavelength?

The relationship including velocity, energy and mass?

Evidence	Conclusion
UV discharges the zinc plate of an electro-scope which is negatively charged.	
Visible radiation, however bright, doesn't produce the same effect.	