Photoelectric effect for dummies

What is the photoelectric effect?

This process is called the photoelectric effect. The photoelectric effect is a property of light that is not explained by the theory that light is a wave. This is one of the main reasons that scientists chose to treat light as both a wave and a stream of particles. where E is energy, v is frequency, and h is Planck's constant.

Can classical physics explain the photoelectric effect?

Classical physics was unable to explain the photoelectric effect. If classical physics applied to this situation, the electron in the metal could eventually collect enough energy to be ejected from the surface even if the incoming light was of low frequency.

How do you analyze the photoelectric effect?

One can analyze the photoelectric effect by using the energy conservation law. The total energy of the incoming photon must be equal to the kinetic energy of the ejected electron plus the energy required to eject the electron from the metal. It is described mathematically by the photoelectric equation:

What are photoelectrons and how do they work?

This process is also often referred to as photoemission, and the electrons that are ejected from the metal are called photoelectrons. In terms of their behavior and their properties, photoelectrons are no different from other electrons. The prefix, photo-, simply tells us that the electrons have been ejected from a metal surface by incident light.

The photoelectric effect is the emission of electrons from a material caused by electromagnetic radiation such as ultraviolet light. Electrons emitted in this ...

A key experiment that was explained by Einstein using light"s particle nature was called the photoelectric effect. The photoelectric effect is a phenomenon that ...

The photoelectric effect was one of many experimental results that made up a crisis for classical physics around the turn of the 20th century. It was ...

When light shines on a metal, electrons can be ejected from the surface of the metal in a phenomenon known as the photoelectric effect. This process is also often referred to as photoemission, and the ...

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Explaining the photoelectric effect using wave-particle duality, the work function of a metal, and how to calculate the velocity of a photoelectron.

1. The kinetic energy of the photoelectrons are independent of intensity but depend on frequency. 2. Below a minimum frequency called the threshold frequency, no photoelectric effect takes place, even ...

So what is the photoelectric effect? It"s the emission of electrons from a metal that has absorbed electromagnetic radiation like light over a certain frequency.

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This phenomenon is called the photoelectric effect. The photoelectric effect is evidence that light is quantized--light exists as discrete packets of energy called photons. The greater the frequency of ...

Learn what the photoelectric effect is, how it was discovered and explained by Einstein, and how it relates to light and matter. Find out the ...

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