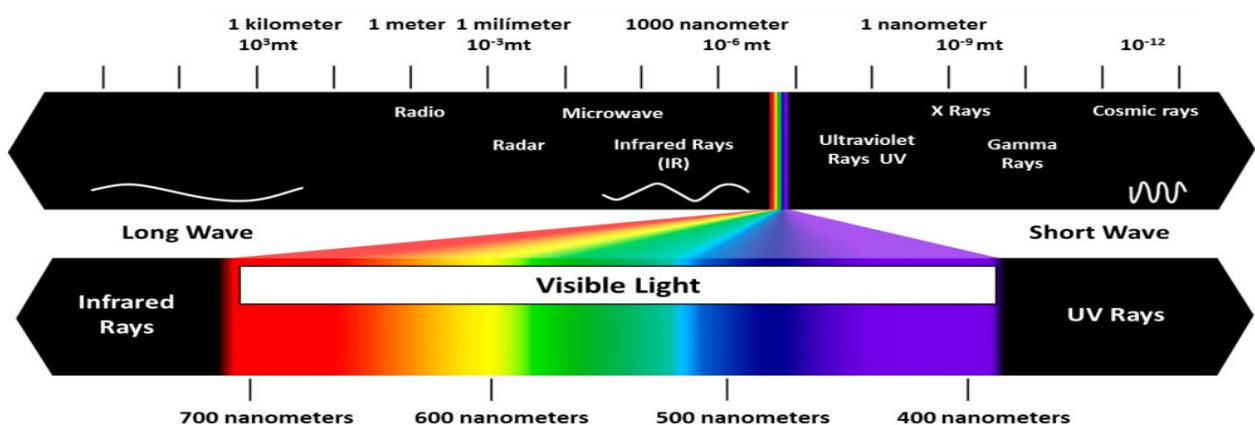


WHAT IS LIGHT OR ELECTROMAGNETISM?



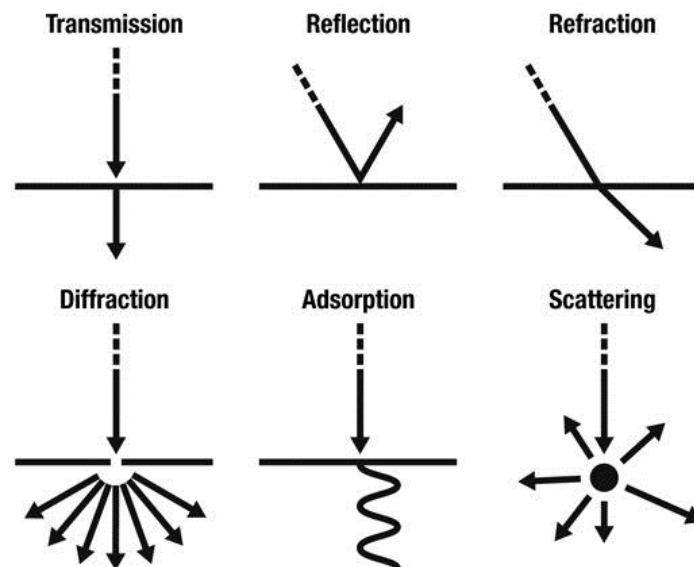
Light is defined as a transferring media of energy through space. Light is a fundamental component of the universe and therefore of our daily lives.

In physics, “light” includes every known radiation field, also called the “electromagnetic spectrum”. The light we can see with our eyes is called “visible light”.



The visible light speed is calculated at vacuum as exact and finite 299,792,458 meters per second (that is approximately 983.5 million feet per second). According to the theory of relativity Einstein no substance or information can travel faster than this speed.

Light interacts with matter and gravity, and therefore can be reflected, diffracted, scattered, adsorbed or transmitted depending on the conditions of interaction.



Although light needs no medium to propagate, its speed may decrease when light passes through any media and even change its direction.

It is theorized that the light appeared immediately after the origin of the universe just after the Big Bang, some 15 billion years ago when all energy was bottled or condensed into a state called the “singularity”.

At some point, all this energy began a process of fragmentation incredibly fast, presumably driven by strong electromagnetism.

This instantaneous energy fragmentation caused the formation of separate particles, photons and matter which were formed when the universe was 0.0000000001 seconds old.

When the universe was 0.0001 seconds old, particles combined electromagnetically to form protons and neutrons, mainly hydrogen atoms called “protium”.

When the universe was 0.01 seconds protons and neutrons arranged in form of atoms.

When the universe was 380,000 years, photons of light were released to travel into space, but decreased in intensity within time, while clustered atoms began to form the first stars, which took millions of years to finally emit their own photons of light.

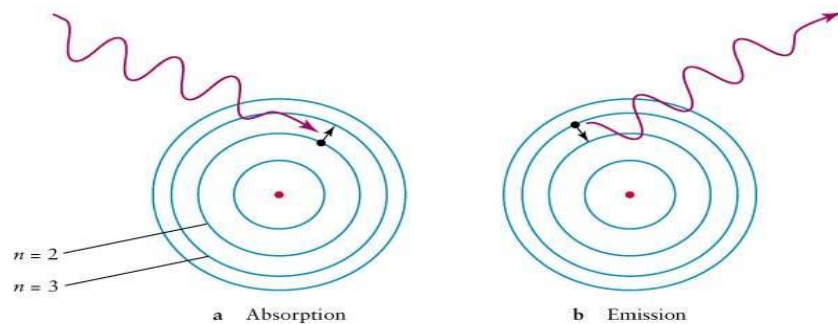
Our sun, for instance, took almost 10.4 billion years to start emitting photons of light.

Light is an electromagnetic energy formed by photons. Photons are basic boson type packages of energy that can be identified whether an atom emits or absorbs energy (this may happen through a chemical reaction, conduction, combustion, by a transition of the nucleus of an atom or the input of energy to a substance).



After an atom is energized, an electron orbiting the nucleus of the atom is driven to higher orbits because an orbit only has a capacity for a certain amount of energy (as an orbit is closer to the nucleus, energy capacity is lower). This electron can not remain in the higher orbits for a long time, so it will eventually return to its normal orbit, releasing energy in form of photons.

Upon the return of the electron to a lower state orbit, the energy of the released photon will be equal to the difference between the energy levels of the orbits, and its characteristics will be of a size and shape with a certain frequency wobble consisting of an oscillating electric field and a magnetic field.



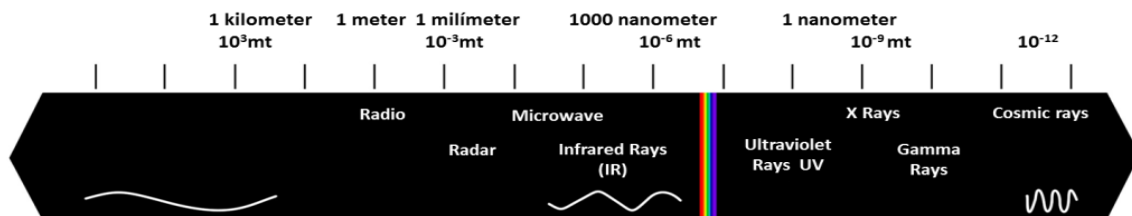
Photons are always in motion, they don't have electric charge, they don't disintegrate into the void and they move at a constant speed "c" (speed of light) transporting energy.

Depending on the frequency that they are emitted can be seen with the naked eye and can be absorbed or emitted while interacting with sources of radiation. When radiation is emitted or absorbed they may also be absorbed or emitted, thus photons can interact with electrons or other particles of matter.

The frequency of a light wave is proportional to the amount of energy the photon holds.

The high-frequency electromagnetic radiation has large amounts of energy (gamma rays) and low frequency light has low energy (radio waves). The more energy a photon has, the more likely it is to penetrate materials.

Electromagnetic radiation visible is what is commonly known as visible light, and can be broken down into different frequencies corresponding to energy levels for each “color” in the range of 430 billion Hertz (red) to 750 billion hertz (violet) .



When photons strike a metal surface, they transfer their energy to the electrons of the metal which are evicted from their atoms to another part of metal or expelled from its surface.

Source: <http://www.artinaid.com/2013/04/what-is-light-or-electromagnetism/>