

Spectra

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Abstract— The Light and the matter interaction was deeply studied. This interaction leads to an observation of spectra. It helps to detect the elements even from the far off places by observing its spectra as it is the signature of the respective elements. The three main spectra observed are continuous spectra, absorption spectra and emission spectra. There are several explanations for the above phenomena. Now, we have one more explanation, which says that electrons are not jumping from low energy level to higher energy level due to excitation. Instead it says that electrons are formed at the corresponding orbits when photons of right wavelength fall on them. Once source of supply on the atom stops, the additional electrons formed at the outer vacant orbits permitted becomes unstable due to insufficient proton in the nucleus gets dissolved in to a electromagnetic waves with corresponding wavelength leaving behind only the electron present at the ground state. This theory explains all the three spectra. When the light of all wavelengths falls on an atom the electrons gets forming at the respective outer orbits of an atom except at the places where electrons are already in an atom. This particular wavelength of light which forms an electron fails to produce spectra and forms the dark lines in the absorption spectra. Once the light falling on an atom stops the additional electron formed at the outer orbit other than the electrons already present in an atom, becomes unstable due insufficient proton at the nucleus gets dissolved and emitted as photons of corresponding wavelength which we call as emission spectra.

Index Terms— continuous spectra, absorption spectra and emission spectra

I. INTRODUCTION

The Universe is made of Light and matter The study of their interaction is important. Their interaction gives rise to the signature of the elements. It helps to find the elements in the sun without being on the Sun. Here, we try to give an explanation based paper “Light is a particle in a wave motion”.

II. HISTORY

The study of spectra started even from the Newton age as he showed white light is made of seven colours by passing Sun light in to the prism. Later many scientists around the world started to build better spectroscopes to improve the spectral resolution. These techniques used in remote sensing and Astronomy. There are explanations that the electrons gets excited when sufficient energy supplied to an atom which when falls to the ground state produces emission spectra. Here, we give an alternate explanation for the above phenomena based on the idea that the electrons are made of photons.

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III. EXPLANATION FOR THE CONTINUOUS, ABSORPTION AND EMISSION SPECTRA

We all know that Electrons revolve around central nucleus along with spin motion around its own axis. Each orbit has only fixed number of electrons permitted as additional electrons cannot be permitted due to like charges repel which leaves no room for the extra electrons. As per paper titled ‘Light is a particle in a wave motion’ electrons and light are considered to be made of Photons. Hence, in our absorption spectra where white light made of all wavelengths is made to fall on an atom, photons tries to form number of electrons at the outer permitted orbits in an atom depending upon its intensity, with its corresponding wavelengths except at the places where electrons are already present in an atom. The electrons formed at the respective vacant orbits corresponding to its wavelength produces dark lines in absorption spectra. Because that particular wavelength of photons became an electron instead of producing spectra may also be called as virtual electrons and Hence the dark lines showing the absence of that particular wavelength. When the wavelength varied which in turn depends upon its energy level starts to form electrons in the higher and higher orbits which produce corresponding more dark lines since that wavelength of photons becomes the electrons instead of producing spectra. Hence, in absorption spectra we find dark lines. Once the source falling on an atom stops, the additional electrons or called as virtual electrons formed at the outer orbit other than the normal electrons present in an atom becomes unstable due to insufficient protons in the nucleus to keep it in orbit gets dissolved and emitted as radiation of corresponding wavelength which forms the emission spectra. The dark lines formed in absorption spectra are the due to formation of virtual electrons and gets emitted in emission spectra due to instability of the same electrons caused by the lack of equal number of protons in the Nucleus. What is not seen in absorption spectra which remain as hidden gets released and seen in the emission spectra. Hence, emission spectra is quite opposite to absorption spectra, where the additional electrons or virtual electrons formed in an atom due to radiation falling on them being unstable gets dissolved and emitted as photons of corresponding wavelength except at the wavelength corresponding to an electron already present in an atom which permanently remains in an atom. We observed that solids, liquids and dense gases emit continuous spectra. In all these cases the orbits are occupied with electrons and there is no sufficient room to form additional electron or virtual electrons from photons falling on them which makes the all photons to produce the continuous spectra.

IV. THE MASS OF THE PHOTONS

We have the equation for the momentum of the photons given by

$$m * c = h/\lambda$$

Where m = mass of photons, c =velocity of light,
 h =planks constant, λ =wavelength of photons.

The above equation gives only the clue that mass of photon varies inversely with its wavelength. But, the equation may need some modifications to get exact equation to find the mass of photons. In the above equation c and h are constants. Here the mass of photons is inversely proportional to its wavelength; mass of photons varies according to its wavelength. The wavelength determines its energy which in turn determines the orbits where the photons may get converted to electrons. The number of electrons formed depends upon the intensity of photons falling on an atom. It is evident clearly from the photoelectric effect and electrons liberated from the atoms due to light falling on some metals. So, the mass of the photons varies inversely to its wavelength.

V. CONCLUSION

Hence, from above argument we can conclude that the Absorption spectra and emission spectra are due to the formation and dissolution of an electron from its corresponding wavelength of photons falling on an atom instead of traditional thought that the jumping of an electron from its lower energy level to higher energy level. The same explanation also given for stimulated emission of radiation where the electrons are already formed in the higher orbits in an atom by the application of the source and when the same wavelength of photons made to fall on an atom, the resonance occurs making the electron in a higher orbit along with the wavelength of photon which fell on an atom to come out together as photons of same wavelength with high intensity which we call as Laser or maser.

REFERENCES

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AUTHORS PROFILE

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