

# Dual nature of light is not comprehensive; the actual nature is going to be introduced

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## Abstract.

The applications of light may be increased after knowing the actual nature of light. The radiation shows many phenomena such as interference, diffraction, photoelectric effect, Compton effect, polarization etc. Last one hundred years the science community thinks that the light has dual natures; in a time it is particle (photon) and other time it is wave. Dual nature of light is doubtful because one phenomena of light cannot be explained by both (photon and wave) natures. As for example the particle concept of photon can explain photoelectric effect but the wave concept of photon cannot explain the photoelectric effect, vice versa. Few ambiguities of the concept are; (i) the energy equation  $E = h\nu$ , is perfect for high frequencies only, (ii) the continuous spectrum and (iii) anti stoke Raman scattering are not explainable by the concept, (iv) the “amplitude” is absent in the wave equation of photon concept so the concept is not able to explain the intensities effect of radiations such as amplitude modulation of the broadcasting systems and so on. (v) Usually the group velocity is smaller than light velocity so the phase velocity should be greater than the light velocity according to the relation of group and phase velocities of electromagnetic radiation, but that is impossible according to the postulate of Einstein’s special relativity. (vi) The energy equation of the photon concept is not associated with vector so the concept is not able to explain the direction of photoelectron of the photoelectric effect. According to the photon concept the photoelectron should eject from back side of the photocell material for elastic collision between the photon and electron but the real fact is opposite. So the photon concept may partially perfect to explain the phenomena of light. Our research group has established an energy equation of light considering electromagnetic wave concept. On the basis of the energy equation the photoelectric effect has been explained without considering photon. The explanation has matched with experimental results very smoothly. A researcher has criticized our explanation of photoelectric effect however we have refuted his report. Our research group has been working on the other photonic behaviors of light by electromagnetic wave concept. It is expected that the electromagnetic wave concept is enough to explain the particle behaviors of light as additional of conventional abilities. So we wish to say that the single nature of light is going to be introduced.

## Biography.

M. Muhibbullah is citizen of Bangladesh who has awarded PhD (2012) degree from Nagoya Institute of Technology, Japan. He is professor (asst) of physics in Bangladesh University since 2013 and life member of Bangladesh physical society.



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