An attempt is made to study the various phenomenon of photoelectret and also reported its related effects in the lattice of mixed composite. The mixed lattice of magnesium titanate (MgTiO$_3$) and zinc oxide (ZnO) is made by firing the mixture of ZnO and MgTiO$_3$ at 650 °C – 850 °C in a muffle furnace under restricted ambiance for 40 - 50 minute. For experimental point of view, cell is constructed in the shape of parallel plate capacitor. Copper is used as an activator atom in mixed lattice (MgTiO$_3$ and ZnO) and chlorine is used as co-activator. The electret exhibits various properties like Photoconductivity (PC), Photoelectret effect, Photo Dielectric Effect (PDE) and Electroluminescence (EL). The photoconducting property of sample/composite (MgTiO$_3$ and ZnO) is investigated with respect to various parameters like voltage, temperature and field intensity.

The significant information regarding electronic transition in semiconductor and nature of photo-excitations may be explicated on the basis of photoconductivity study. The electroluminescence of mixed composite is also studied. The intensity increases and usual laws of luminescence are followed. ZnO is though an efficient luminescent material and MgTiO$_3$ is non – luminescent. Hence to observe the behavior of material (mixed composite), efforts are made. Spectral distribution shows maxima at 5460Å with excitation frequency and voltage. The effect of voltage, field frequency and wavelength on electroluminescence is investigated. The comparative study of photoelectret charge with different parameters such as polarizing time, wavelength, intensity of illumination and applied field are studied. The photo dielectric effect is also studied in mixed composite of MgTiO$_3$ and ZnO in different ratio. The measurements are taken in the frequency range (100 Hz - 50000 Hz) at temperature range between 40°C to 90°C and illuminated with intensity of 5000 lux. The variation of conductance (G), capacitance (C) and loss factor (tanδ) of the material is observed with respect to temperature, intensity of illumination and field frequency.