Luminescence can be broadly defined as the phenomenon in which emission of electromagnetic radiation takes place by a system after its excitation. Luminescence exhibited by organic molecules is classified into the following three types: Fluorescence, Phosphorescence and Delayed fluorescence. This classification is made based on the length of time or duration, during which emission occurs. If the emission of radiation takes place during the process of excitation or within $10^{-8}$ sec. after the process of excitation, it is called fluorescence. The fluorescence radiation is due to the allowed singlet-singlet transition and decays exponentially. If the radiation decays exponentially with longer decay times and at longer wavelengths compared to that of fluorescence, it is called phosphorescence and is due to triplet-singlet transition which is forbidden. If the radiation decays non-exponentially over longer times with the same spectrum as in fluorescence, it is called delayed fluorescence and is due to the thermal excitation of the triplet state to the first excited singlet state leading to the allowed singlet-singlet transition. The system can be excited by several processes such as chemical reaction, absorption of light, heating etc.. Then, the luminescence is termed respectively as Chemiluminescence, Photoluminescence, Thermoluminescence, etc.. If the mechanism of excitation of the system is due to high energy radiation such as $\alpha$, $\beta$ and $\gamma$ particles, the phenomenon of emission of light by the system is called Scintillation. The
development of photomultipliers made it possible to detect these radiations more efficiently and to study the phenomenon quantitatively.

In the field of research in high energy radiation such as cosmic radiation, it was found necessary to use crystals of larger dimensions and of different shapes with photomultipliers. Growing crystals of larger dimensions and of different shapes was not only uneconomical but also difficult. In order to avoid these difficulties Kallmann et al., (1950); Ageno et al., (1952); and Reynolds et al., (1952) replaced crystals by organic liquids, taking some organic liquids such as toluene, benzene as solvents and suitable organic compounds such as $p$-Terphenyl, Anthracene, etc. as solutes. This was the beginning of the study of liquid scintillators.

Subsequent development of the study of liquid scintillators runs along two different lines. One is to have better scintillation detectors for different purposes such as internal counting of very low energy beta radiations (from $^3$H, $^{14}$C etc.), for detection of neutrons with lithium, boron or cadmium loading and for cosmic ray research. The other purpose is to study liquid scintillation as a phenomenon i.e. to study in detail the various intermediate mechanisms responsible for energy transfer that takes place between the process of absorption of the incident radiation by the solvent molecules and its re-emission as fluorescent radiation by the solute molecules. And the other way
of studying liquid scintillation as a phenomenon is by quenching method in which an external quencher is added to quench the excited solvent/solute molecules.

In order to understand these intermediate mechanisms responsible for the overall transfer / quenching of excitation energy from the excited solvent molecules to the unexcited solute molecules / from the excited solute molecules to quencher molecules, the phenomenon of energy transfer / quenching in organic liquid scintillator systems has been studied extensively by many investigators during the nearly last five decades. The problem has been probed to bring to light the hidden mechanisms responsible for the energy transfer / quenching processes. The purpose of the present investigation is to understand the various intermediate mechanisms and to throw more light on the intricacies involved in these mechanisms. In the present study we use the quenching method in which the excited solute molecules are quenched by an external quencher under different environments using steady state and transient methods.