

## ABSTRACT:

The photoluminescence of Rhodamine-B dye dispersed in water has been studied in the presence of different amounts. Enhancement as well as quenching of luminescence intensity has been observed and it was found that luminescence intensity can be tuned by adding various amount of Ag nanoparticle to the Rhodamine-B dye dispersion. PL-intensity peak at 701nm of dye molecule was found to be quenched in presence of silver nanoparticle and maximum intensity was found for the dye with 1ml silver nanoparticle. However for lowest concentration of silver nanoparticle enhancement in intensity was observed. The quenching as well as enhancement in the intensity can be understood by considering the possibility of three phenomena. It has been reported earlier that when metal nanoparticle are close proximity to the fluorophore, quenching of luminescence occur, whereas when metal nanoparticle are in close proximity to the fluorophore, quenching of luminescence occur, where as when metal nanoparticle are located at certain distance , enhancement in luminescence is observed. This effect has been explained by coupling of surface plasmon resonance from the metal nanoparticle with fluorophore, resulting in the increase of excitation and emission rate of fluorophore in the localized electromagnetic field. The quenching and enhancement of luminescence intensity of the dye molecule can also be explained as the transfer of electron from dye to the silver nanoparticle and to extend it can be attribute to the aggregation of dye molecule upon addition of Ag nanoparticle.