

ABSTRACT

CdS nano particles pure and doped with lanthanum have been prepared at different concentration of lanthanum (0 ,0.04, 0.06, 0.08, 0.10)% by a method known as micro emulsion method in the presence of cationic surfactant CTAB (Cetyl trimethyle ammonium bromide). Size and phase of nano particles was confirmed through XRD analysis. Cubic zinc blende structure of $Cd_{1-x}S:La_x$ ($x=0, 0.04, 0.06, 0.08, 0.10$) nano particles was found in pure sample and at lower concentration up to 0.06 .At 0.08 percent lanthanum hexagonal wurtzite structure also appears . At higher doping level of 0.10 agglomeration of lanthanum ions started and sample again shifted toward cubic zinc blende structure. EDX spectra confirm the successful doping and purity of material in all cases. SEM micrographs show that nano particles with spherical symmetry are formed. Diffuse UV visible spectra and photo luminescence spectra confirm the changes in optical and electrical properties due to quantum confinement effect of different size of nano particles Through UV spectroscopy its band gap was revealed first to be decreased and then increases due to agglomeration of lanthanum.