The InP semiconductor quantum dots, have generated great interest in recent years because of their very interesting optical and electrical properties. Its main feature the reduction in size of InP by ligand exchange caused a blue shift of the PL peak due to the quantum confinement effect, which is an advantage for applications such as biological markers. In this work we present the effect of varying the concentration of tris (trimethylsilyl) phosphine \([\text{P(TMS)}_3]\) in the synthesis of InP semiconductor quantum dots (QDs), using a single-step procedure without precursor injection [1]. The experimental conditions were as follows: reaction temperature of 280°C, reaction time of 2h, indium myristate concentration 0.2mmol and octadecene as solvent 10ml. By using absorption spectra of QDs it can be seen a shift in absorption shoulder at 600 nm to 500 nm as the concentration \([\text{P(TMS)}_3]\) increases. With using UV-Vis absorption spectra we can characterize the nanoparticles and using theory we estimated the size of these nanoparticles between 7nm-9nm, average particle size estimation was done by substituting XRD peak broadening in Scherrer’s formula, obtaining values between 7nm and 9 nm, and also these results are compared with the size measurement obtained from TEM image. Photoluminescence spectra with a broad peak around 590nm is observed which is associate to the excitonic transition of InP. The size of nanoparticles synthesized can be controlled by varying the concentration of the molecular precursor \([\text{P(TMS)}_3]\).

**Keywords:** Quantum dots, InP, single-step

**References:**


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