ABSTRACT

Tin oxide (SnO$_2$) nanoparticles have been synthesized by simple chemical precipitation method using tin chloride dihydrated (SnCl$_2$.2H$_2$O) as precursor and SDS as surfactant. Nickel doped tin oxide nanoparticles have also been synthesized by using NiCl$_2$.6H$_2$O as a dopant. The synthesized nanoparticles were subjected for characterization using FTIR, SEM, XRD and UV-VIS spectroscopy. Band gap for both bare and nickel doped SnO$_2$ nanoparticles was calculated using UV-VIS spectroscopy. Average crystallite size of SnO$_2$ and nickel doped SnO$_2$ was also calculated using Debye Scherrer relation. Synthesized nanoparticles show photocatalytic activity against congo red dye and antibacterial activity against *Pseudomonas aeruginosa* and *Staphylococcus aureus*.

**Keywords:** SnO$_2$, doping, photocatalytic and antibacterial.