

Abstract

In this study, the synthesis of Tin (IV) Oxide nanoparticles was investigated. Primarily two different methods were examined for the synthesis of SnO₂ nanoparticles. In chemical method, different amounts of CTAB were used. In green method, different amounts of *Chamaemelum nobile* extract were used. SnCl₂.2H₂O salt was used in order to the preparation of SnO₂ nanoparticles. The morphology and the particle size of SnO₂ nanoparticles were investigated by using Field Emission Scanning Electron Microscopy (FESEM), Transmission Electron Microscopy (TEM), Photoluminescence (PL), X-ray Diffraction (XRD), Energy Dispersive X-Ray Spectroscopy (EDS) and Fourier Transform-Infrared Spectrophotometer (FTIR). According to the X-ray diffraction analysis, the average crystallite size of Nps was in the range of 7-16 nm. Scanning electron microscope images showed the desired shape of tetragonal for the nanoparticles which was the most favorable structure for biological testing. Finally the biological properties of nanoparticles was discussed.

Keywords: Tin (IV) oxide Nanoparticles, Chemical precipitation, Cetyl trimethyl ammonium bromide, *Chamaemelum nobile*, Biological activity.



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**The Thesis Submitted for the Degree of Master of Science
(In the field of Organic Chemistry)**

**Size-controlled synthesis, characterization
and biological activity of SnO₂ nanoparticles
via chemical (Precipitation) and green
(*Chamaemelum nobile*) methods**

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January 2016