

Antibacterial activity of In-doped ZnO nanoparticles

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June 12, 2020

Abstract

In the present work, undoped and In-doped zinc oxide (ZnO) nanoparticles have been prepared by sol gel technique. The structural and morphological properties of the obtained nanoparticles have been studied using respectively X-ray diffraction (XRD), Raman spectroscopy and scanning electron microscopy (SEM). The electronic defects in the nanopowder band gap were investigated by photoluminescence (PL) spectroscopy. The antibacterial activities of the prepared nanopowders have been tested against Gram positive and Gram negative bacteria's. Based on the inhibition zone determination. The In doping effect is explained in term of the electronic defect enhancement such as inertial defect Zni and vacancy defect Vzn with In doping, these two defects act as source of electrons and holes during the reactive oxygen species (ROS) production responsible for bacteria's destruction. Due to the bonded hydrogen charge transfer crystal screening, the prepared ZnO nanoparticles exhibit a low antioxidant activity

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