

Abstract

Autocombustion method was used to synthesize pure ZnO and Ce-doped ZnO (CZO) nanomaterials with dissimilar cerium concentrations (2%, 4%, 6%, and 8%) as ZO, 2CZO, 4CZO, 6CZO, and 8CZO, respectively, followed by sintering at 900 °C for 3 h. The Ce-doped ZnO nanomaterials were characterized by XRD, UV-vis spectroscopy, SEM and FTIR techniques. From XRD results revealed that synthesized nanomaterials exhibited hexagonal wurtzite structure with the smaller crystallite size. Red shift of Absorption spectra shown that cerium doping improved the light absorption properties toward the visible light region. ZnO and Ce-doped ZnO nanomaterials produced by autocombustion method has different sizes, size distribution and shapes confirmed by SEM. The doping of Ce in ZnO confirmed by FTIR. The Antimicrobial activity of ZnO and Ce-doped ZnO were tested by disc diffusion method. The synthesized Ce-doped ZnO nanomaterials have shown significant antibacterial activity against *B. subtilis*, *E. coli*, *A. rhizospherensis* and *B. meurellus*.